

JLX240-003-PN 使用说明书

(不带字库 IC)

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1. 概述

晶联讯电子专注于液晶屏及液晶模块的研发、制造。所生产 JLX240-003-PN 型液晶模块由于使用方便、显示清晰，广泛应用于各种人机交流面板。

JLX240-003-PN 可以显示 320 列*240 行点阵彩色图片，或显示 20 个/行*15 行 16*16 点阵的汉字，或显示 40 个/行*30 行 8*8 点阵的英文、数字、符号。

本产品可选择带中文字库 IC 型号是 JLX240-003-PC 与不带中文字库 IC 型号是 JLX240-003-PN 两种。

2. JLX240-003-PN 彩色图像型点阵液晶模块的特性

2.1 结构轻、薄、带背光。

2.2 IC 采用 ILI9341, 功能强大, 稳定性好

2.3 显示内容:

- 240*320 点阵彩色图片;

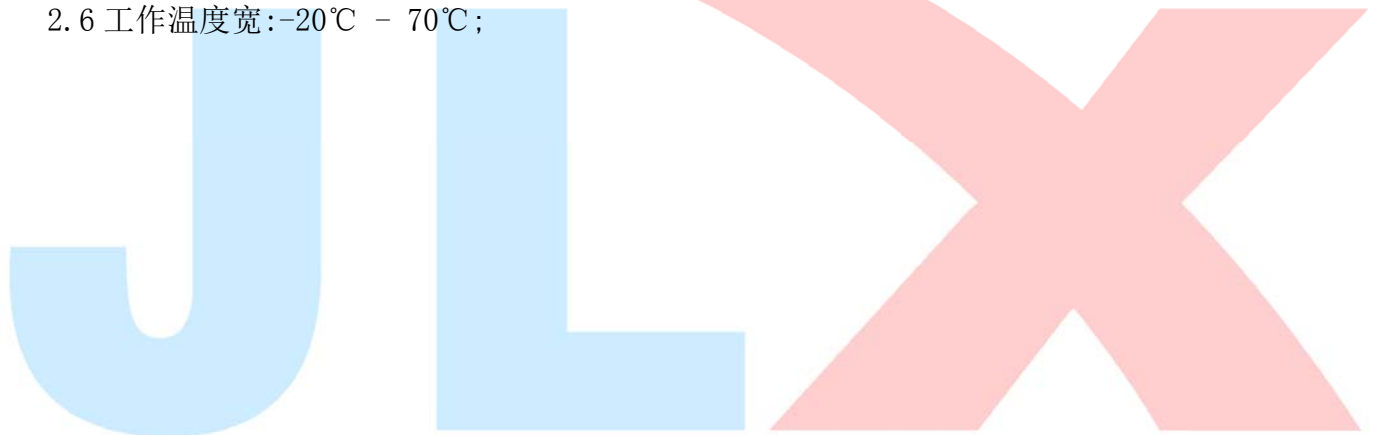
- 可选用 32*32 点阵或其他点阵的图片来自编汉字, 按照 32*32 点阵汉字来计算可显示 10 个字/行*7 行。

- 可选用 16*16 点阵或其他点阵的图片来自编汉字, 按照 16*16 点阵汉字来计算可显示 20 个字/行*15 行。

2.4 指令功能强: 例如可以用指令控制显示内容顺时针旋转 90°、逆时针旋转 90° 或倒立竖放。

2.5 接口简单方便: 采用 8 位并行接口。

2.6 工作温度宽: -20°C - 70°C;



3. 外形尺寸及接口引脚功能

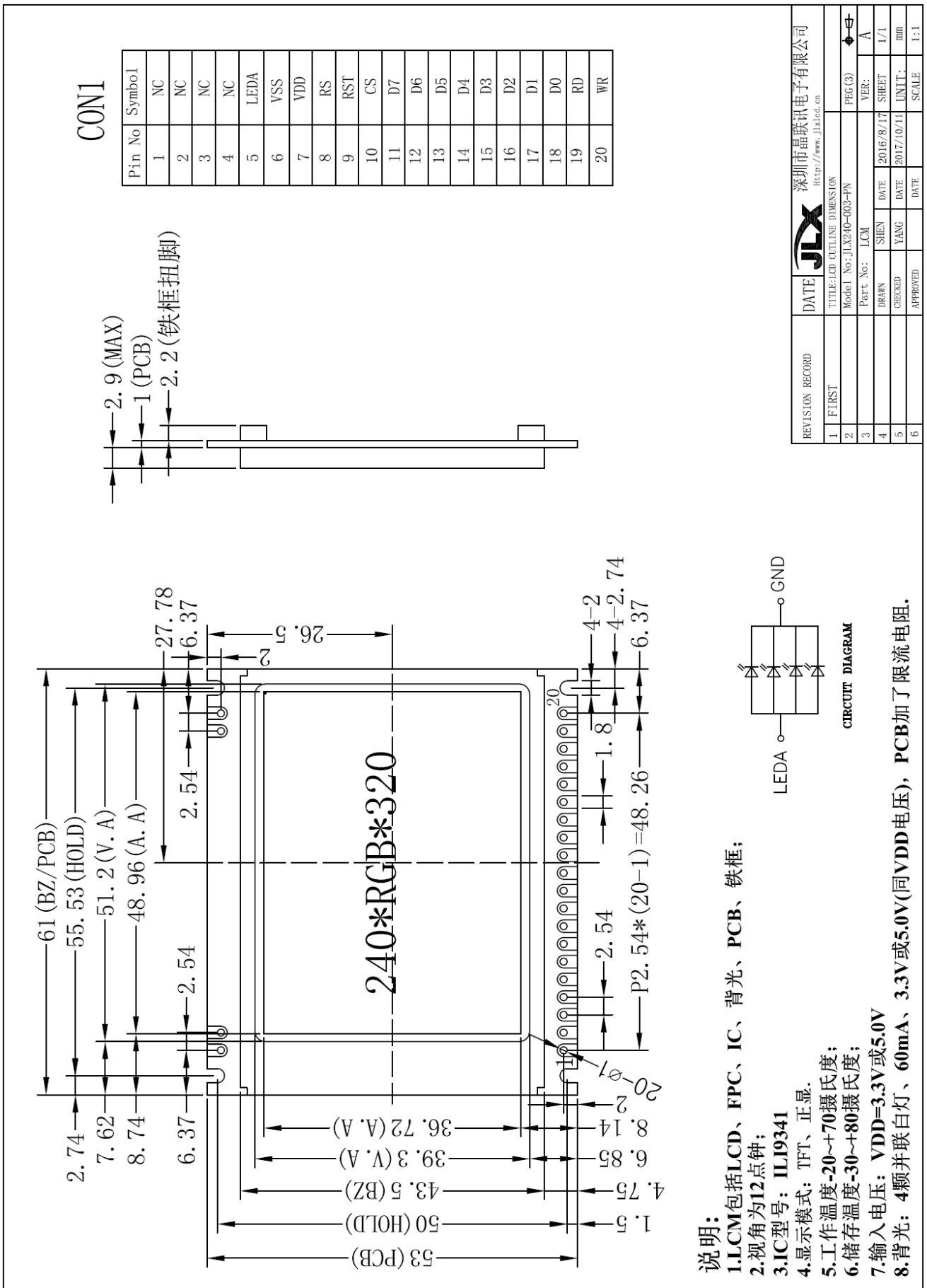
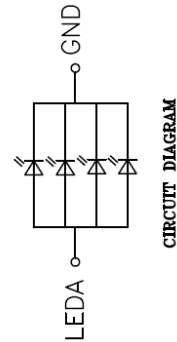


图 1. 外形尺寸

说明:

1. LCM包括LCD、FPC、IC、背光、PCB、铁框;
2. 视角为12点钟;
3. IC型号: ILI9341
4. 显示模式: TFT、正显.
5. 工作温度 -20~+70摄氏度;
6. 储存温度 -30~+80摄氏度;
7. 输入电压: VDD=3.3V或5.0V
8. 背光: 4颗并联白灯、60mA、3.3V或5.0V(同VDD电压), PCB加了限流电阻.



模块的接口引脚功能

表 1: 模块的接口引脚功能

引线号	符号	名称	功能
1	NC	NC	空脚
2	NC	NC	空脚
3	NC	NC	空脚
4	NC	NC	空脚
5	LEDA	背光电源	背光电源正极, 3.3V 或 5.0V (同 VDD 电压)
6	VSS	接地	0V
7	VDD	电路电源	3.3V 或 5.0V
8	A0 (RS)	寄存器选择信号	H: 数据寄存器 0: 指令寄存器 (IC 资料上所写为 "A0")
9	RST	复位	低电平复位, 复位完成后, 回到高电平, 液晶模块开始工作
10	CS	片选	低电平片选
11-18	D7-D0	I/O	数据总线 DB7-DB0
19	RD (E)	使能信号	使能信号
20	WR	读/写	H: 读数据 0: 写数据

4. 基本原理

4.1 液晶屏 (LCD)

在 LCD 上排列着 240×320 点阵, 320 个列信号与驱动 IC 相连, 240 个行信号也与驱动 IC 相连, IC 邦定在 LCD 玻璃上 (这种加工工艺叫 COG)。

4.3 背光参数

该型号液晶模块带 LED 背光源。它的性能参数如下:

工作温度: -20~+70° C;

存储温度: -30~+80° C;

背光板是白色。

正常工作电流为: 40~80mA (LED 灯数共 4 颗, 每颗灯是 10~20 mA)

工作电压: 同 VDD 电压 (LED 灯本身的电压是 3.0V, 但是在 PCB 上已加了限流电阻, 所以可以同 VDD 电压);

5. 技术参数

5.1 最大极限参数 (超过极限参数则会损坏液晶模块)

名称	符号	标准值			单位
		最小	典型	最大	
电路电源	VDD	-0.3	3.3	3.3	V
工作温度		-20		+70	°C
储存温度		-30		+80	°C

表 2: 最大极限参数

5.2 直流 (DC) 参数

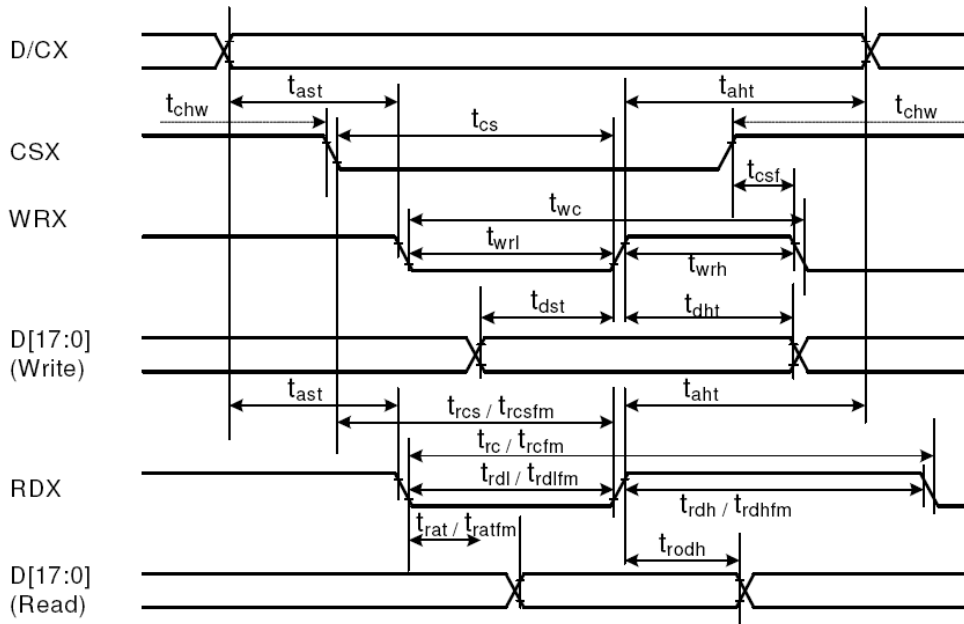
名称	符号	测试条件	标准值			单位
			最小	典型值	最大	
工作电压	VDD		2.8	3.0	3.3	V
背光工作电压	VLED		2.9	3.0	3.1	V
背光工作电流	ILED	VLED=3.0V, 共 4 颗 LED 灯并联	40	60	80	mA

表 3: 直流 (DC) 参数

6. 读写时序特性

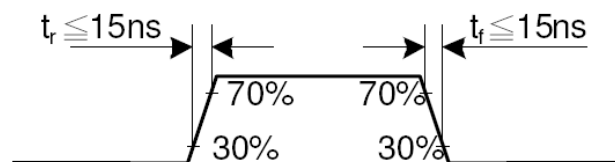
详见 IC 资料 “IL19341”, 请找相关客服人员索要。





Signal	Symbol	Parameter	min	max	Unit	Description
DCX	tast	Address setup time	0	-	ns	
	taht	Address hold time (Write/Read)	0	-	ns	
CSX	tchw	CSX "H" pulse width	0	-	ns	
	tcs	Chip Select setup time (Write)	15	-	ns	
	trcs	Chip Select setup time (Read ID)	45	-	ns	
	trcsfm	Chip Select setup time (Read FM)	355	-	ns	
	tcsf	Chip Select Wait time (Write/Read)	10	-	ns	
WRX	twc	Write cycle	66	-	ns	
	twrh	Write Control pulse H duration	15	-	ns	
	twrL	Write Control pulse L duration	15	-	ns	
RDX (FM)	trcfm	Read Cycle (FM)	450	-	ns	
	trdhfm	Read Control H duration (FM)	90	-	ns	
	trdlfm	Read Control L duration (FM)	355	-	ns	
RDX (ID)	trc	Read cycle (ID)	160	-	ns	
	trdh	Read Control pulse H duration	90	-	ns	
	trdl	Read Control pulse L duration	45	-	ns	
D[17:0], D[15:0], D[8:0], D[7:0]	tdst	Write data setup time	10	-	ns	For maximum CL=30pF For minimum CL=8pF
	tdht	Write data hold time	10	-	ns	
	trat	Read access time	-	40	ns	
	tratfm	Read access time	-	340	ns	
	trod	Read output disable time	20	80	ns	

Note: Ta = -30 to 70 °C, VDDI=1.65V to 3.3V, VCI=2.5V to 3.3V, VSS=0V



7. 指令功能:

7.1 指令表

指令表 8.

Regulative Command Set														
Command Function	D/CX	RDX	WRX	D17-8	D7	D6	D5	D4	D3	D2	D1	D0	Hex	
No Operation	0	1	↑	XX	0	0	0	0	0	0	0	0	00h	
Software Reset	0	1	↑	XX	0	0	0	0	0	0	0	1	01h	
Read Display Identification Information	0	1	↑	XX	0	0	0	0	0	1	0	0	04h	
	1	↑	1	XX	X	X	X	X	X	X	X	X	XX	
	1	↑	1	XX	ID1 [7:0]							XX		
	1	↑	1	XX	ID2 [7:0]							XX		
	1	↑	1	XX	ID3 [7:0]							XX		
Read Display Status	0	1	↑	XX	0	0	0	0	1	0	0	1	09h	
	1	↑	1	XX	X	X	X	X	X	X	X	X	XX	
	1	↑	1	XX	D [31:25]							X	00	
	1	↑	1	XX	X	D [22:20]			D [19:16]				61	
	1	↑	1	XX	X	X	X	X	X	D [10:8]			00	
Read Display Power Mode	1	↑	1	XX	D [7:5]							X	00	
	0	1	↑	XX	0	0	0	0	1	0	1	0	0Ah	
	1	↑	1	XX	X	X	X	X	X	X	X	X	XX	
Read Display MADCTL	1	↑	1	XX	D [7:2]							0	0	08
	0	1	↑	XX	0	0	0	0	1	0	1	1	0Bh	
	1	↑	1	XX	X	X	X	X	X	X	X	X	XX	
Read Display Pixel Format	1	↑	1	XX	D [7:2]							0	0	00
	0	1	↑	XX	0	0	0	0	1	1	0	0	0Ch	
	1	↑	1	XX	X	X	X	X	X	X	X	X	XX	
Read Display Image Format	1	↑	1	XX	RIM	DPI [2:0]			X	DBI [2:0]			06	
	0	1	↑	XX	0	0	0	0	1	1	0	1	0Dh	
	1	↑	1	XX	X	X	X	X	X	X	X	X	XX	
Read Display Signal Mode	1	↑	1	XX	X	X	X	X	X	X	X	X	XX	
	0	1	↑	XX	0	0	0	0	1	1	1	0	0Eh	
	1	↑	1	XX	D [7:2]							0	0	00
Read Display Self-Diagnostic Result	0	1	↑	XX	0	0	0	0	1	1	1	1	0Fh	
	1	↑	1	XX	X	X	X	X	X	X	X	X	XX	
	1	↑	1	XX	D [7:6]							X	X	00
Enter Sleep Mode	0	1	↑	XX	0	0	0	1	0	0	0	0	10h	
Sleep OUT	0	1	↑	XX	0	0	0	1	0	0	0	1	11h	
Partial Mode ON	0	1	↑	XX	0	0	0	1	0	0	1	0	12h	
Normal Display Mode ON	0	1	↑	XX	0	0	0	1	0	0	1	1	13h	
Display Inversion OFF	0	1	↑	XX	0	0	1	0	0	0	0	0	20h	
Display Inversion ON	0	1	↑	XX	0	0	1	0	0	0	0	1	21h	
Gamma Set	0	1	↑	XX	0	0	1	0	0	1	1	0	26h	
	1	1	↑	XX	GC [7:0]							01		
Display OFF	0	1	↑	XX	0	0	1	0	1	0	0	0	28h	
Display ON	0	1	↑	XX	0	0	1	0	1	0	0	1	29h	
Column Address Set	0	1	↑	XX	0	0	1	0	1	0	1	0	2Ah	
	1	1	↑	XX	SC [15:8]							XX		
	1	1	↑	XX	SC [7:0]							XX		
	1	1	↑	XX	EC [15:8]							XX		
	1	1	↑	XX	EC [7:0]							XX		
Page Address Set	0	1	↑	XX	0	0	1	0	1	0	1	1	2Bh	
	1	1	↑	XX	SP [15:8]							XX		
	1	1	↑	XX	SP [7:0]							XX		
	1	1	↑	XX	EP [15:8]							XX		
	1	1	↑	XX	EP [7:0]							XX		

Memory Write	0	1	↑	XX	0	0	1	0	1	1	0	0	2Ch
	1	1	↑		D [17:0]								XX
Color SET	0	1	↑	XX	0	0	1	0	1	1	0	1	2Dh
	1	↑	1	XX						R00 [5:0]			XX
	1	↑	1	XX						Rnn [5:0]			XX
	1	↑	1	XX						R31 [5:0]			XX
	1	↑	1	XX						G00 [5:0]			XX
	1	↑	1	XX						Gnn [5:0]			XX
	1	↑	1	XX						G64 [5:0]			XX
	1	↑	1	XX						B00 [5:0]			XX
	1	↑	1	XX						Bnn [5:0]			XX
	1	↑	1	XX						B31 [5:0]			XX
Memory Read	0	1	↑	XX	0	0	1	0	1	1	1	0	2Eh
	1	↑	1	XX	X	X	X	X	X	X	X	X	XX
	1	↑	1		D [17:0]								XX
Partial Area	0	1	↑	XX	0	0	1	1	0	0	0	0	30h
	1	1	↑	XX						SR [15:8]			00
	1	1	↑	XX						SR [7:0]			00
	1	1	↑	XX						ER [15:8]			01
	1	1	↑	XX						ER [7:0]			3F
Vertical Scrolling Definition	0	1	↑	XX	0	0	1	1	0	0	1	1	33h
	1	1	↑	XX						TFA [15:8]			00
	1	1	↑	XX						TFA [7:0]			00
	1	1	↑	XX						VSA [15:8]			01
	1	1	↑	XX						VSA [7:0]			40
	1	1	↑	XX						BFA [15:8]			00
1	1	↑	XX						BFA [7:0]			00	
Tearing Effect Line OFF	0	1	↑	XX	0	0	1	1	0	1	0	0	34h
Tearing Effect Line ON	0	1	↑	XX	0	0	1	1	0	1	0	1	35h
	1	1	↑	XX	X	X	X	X	X	X	X	M	00
Memory Access Control	0	1	↑	XX	0	0	1	1	0	1	1	0	36h
	1	1	↑	XX	MY	MX	MV	ML	BGR	MH	X	X	00
Vertical Scrolling Start Address	0	1	↑	XX	0	0	1	1	0	1	1	1	37h
	1	1	↑	XX						VSP [15:8]			00
	1	1	↑	XX						VSP [7:0]			00
Idle Mode OFF	0	1	↑	XX	0	0	1	1	1	0	0	0	38h
Idle Mode ON	0	1	↑	XX	0	0	1	1	1	0	0	1	39h
Pixel Format Set	0	1	↑	XX	0	0	1	1	1	0	1	0	3Ah
	1	1	↑	XX	X		DPI [2:0]		X		DBI [2:0]		66
Write Memory Continue	0	1	↑	XX	0	0	1	1	1	1	0	0	3Ch
	1	1	↑		D [17:0]								XX
Read Memory Continue	0	1	↑	XX	0	0	1	1	1	1	1	0	3Eh
	1	↑	1	XX	X	X	X	X	X	X	X	X	XX
	1	↑	1		D [17:0]								XX
Set Tear Scanline	0	1	↑	XX	0	1	0	0	0	1	0	0	44h
	1	1	↑	XX	X	X	X	X	X	X	X	STS [8]	00
	1	1	↑	XX						STS [7:0]			00
Get Scanline	0	1	↑	XX	0	1	0	0	0	1	0	1	45h
	1	↑	1	XX	X	X	X	X	X	X	X	X	XX
	1	↑	1	XX	X	X	X	X	X	X		GTS [9:8]	00
	1	↑	1	XX						GTS [7:0]			00
Write Display Brightness	0	1	↑	XX	0	1	0	1	0	0	0	1	51h
	1	1	↑	XX						DBV [7:0]			00

Read Display Brightness	0	1	↑	XX	0	1	0	1	0	0	1	0	52h
	1	↑	1	XX	X	X	X	X	X	X	X	X	XX
	1	↑	1	XX	DBV [7:0]								00
Write CTRL Display	0	1	↑	XX	0	1	0	1	0	0	1	1	53h
	1	1	↑	XX	X	X	BCTRL	X	DD	BL	X	X	00
Read CTRL Display	0	1	↑	XX	0	1	0	1	0	1	0	0	54h
	1	↑	1	XX	X	X	X	X	X	X	X	X	XX
	1	↑	1	XX	X	X	BCTRL	X	DD	BL	X	X	00
Write Content Adaptive Brightness Control	0	1	↑	XX	0	1	0	1	0	1	0	1	55h
	1	1	↑	XX	X	X	X	X	X	X	C [1:0]		00
Read Content Adaptive Brightness Control	0	1	↑	XX	0	1	0	1	0	1	1	0	56h
	1	↑	1	XX	X	X	X	X	X	X	X	X	XX
	1	↑	1	XX	X	X	X	X	X	X	C [1:0]		00
Write CABC Minimum Brightness	0	1	↑	XX	0	1	0	1	1	1	1	0	5Eh
	1	1	↑	XX	CMB [7:0]								00
Read CABC Minimum Brightness	0	1	↑	XX	0	1	0	1	0	1	1	1	5Fh
	1	↑	1	XX	X	X	X	X	X	X	X	X	XX
	1	↑	1	XX	CMB [7:0]								00
Read ID1	0	1	↑	XX	1	1	0	1	1	0	1	0	DAh
	1	↑	1	XX	X	X	X	X	X	X	X	X	XX
	1	↑	1	XX	Module's Manufacture [7:0]								XX
Read ID2	0	1	↑	XX	1	1	0	1	1	0	1	1	DBh
	1	↑	1	XX	X	X	X	X	X	X	X	X	XX
	1	↑	1	XX	LCD Module / Driver Version [7:0]								XX
Read ID3	0	1	↑	XX	1	1	0	1	1	1	0	0	DCh
	1	↑	1	XX	X	X	X	X	X	X	X	X	XX
	1	↑	1	XX	LCD Module / Driver ID [7:0]								XX

Extended Command Set													
Command Function	D/CX	RDX	WRX	D17-8	D7	D6	D5	D4	D3	D2	D1	D0	Hex
RGB Interface Signal Control	0	1	↑	XX	1	0	1	1	0	0	0	0	B0h
	1	1	↑	XX	ByPass_MODE	RCM [1:0]		X	VSPL	HSPL	DPL	EPL	40
Frame Control (In Normal Mode)	0	1	↑	XX	1	0	1	1	0	0	0	1	B1h
	1	1	↑	XX	X	X	X	X	X	X	DIVA [1:0]		00
	1	1	↑	XX	X	X	X	RTNA [4:0]				1B	
Frame Control (In Idle Mode)	0	1	↑	XX	1	0	1	1	0	0	1	0	B2h
	1	1	↑	XX	X	X	X	X	X	X	DIVB [1:0]		00
	1	1	↑	XX	X	X	X	RTNB [4:0]				1B	
Frame Control (In Partial Mode)	0	1	↑	XX	1	0	1	1	0	0	1	1	B3h
	1	1	↑	XX	X	X	X	X	X	X	DIVC [1:0]		00
	1	1	↑	XX	X	X	X	RTNC [4:0]				1B	
Display Inversion Control	0	1	↑	XX	1	0	1	1	0	1	0	0	B4h
	1	1	↑	XX	X	X	X	X	X	NLA	NLB	NLC	02
Blanking Porch Control	0	1	↑	XX	1	0	1	1	0	1	0	1	B5h
	1	1	↑	XX	0	VFP [6:0]						02	
	1	1	↑	XX	0	VBP [6:0]						02	
	1	1	↑	XX	0	0	0	HFP [4:0]				0A	
	1	1	↑	XX	0	0	0	HBP [4:0]				14	

Display Function Control	0	1	↑	XX	1	0	1	1	0	1	1	0	B6h	
	1	1	↑	XX	X	X	X	X	PTG [1:0]	PT [1:0]			0A	
	1	1	↑	XX	REV	GS	SS	SM	ISC [3:0]			82		
	1	1	↑	XX	X	X	NL [5:0]						27	
	1	1	↑	XX	X	X	PCDIV [5:0]						XX	
Entry Mode Set	0	1	↑	XX	1	0	1	1	0	1	1	1	B7h	
	1	1	↑	XX	X	X	X	X	0	GON	DTE	GAS	07	
Backlight Control 1	0	1	↑	XX	1	0	1	1	1	0	0	0	B8h	
	1	1	↑	XX	X	X	X	X	X	X	X	X	XX	
	1	1	↑	XX	X	X	X	X	TH UI [3:0]			04		
Backlight Control 2	0	1	↑	XX	1	0	1	1	1	0	0	1	B9h	
	1	1	↑	XX	X	X	X	X	X	X	X	X	XX	
	1	1	↑	XX	TH MV [3:0]			TH ST [3:0]			B8			
Backlight Control 3	0	1	↑	XX	1	0	1	1	1	0	1	0	BAh	
	1	1	↑	XX	X	X	X	X	X	X	X	X	XX	
	1	1	↑	XX	X	X	X	X	DTH UI [3:0]			04		
Backlight Control 4	0	1	↑	XX	1	0	1	1	1	0	1	1	BBh	
	1	1	↑	XX	X	X	X	X	X	X	X	X	XX	
	1	1	↑	XX	DTH MV [3:0]			DTH ST [3:0]			C9			
Backlight Control 5	0	1	↑	XX	1	0	1	1	1	1	0	0	BCh	
	1	1	↑	XX	X	X	X	X	X	X	X	X	XX	
	1	1	↑	XX	DIM2 [3:0]			X	DIM1 [2:0]			44		
Backlight Control 7	0	1	↑	XX	1	0	1	1	1	1	1	0	BEh	
	1	1	↑	XX	PWM_DIV [7:0]							0F		
Backlight Control 8	0	1	↑	XX	1	0	1	1	1	1	1	1	BFh	
	1	1	↑	XX	X	X	X	X	X	LEDONR	LEDONPOL	LEDPWMOPL	00	
Power Control 1	0	1	↑	XX	1	1	0	0	0	0	0	0	C0h	
	1	1	↑	XX	X	X	VRH [5:0]						26	
Power Control 2	0	1	↑	XX	1	1	0	0	0	0	0	1	C1h	
	1	1	↑	XX	X	X	X	X	X	BT [2:0]			00	
VCOM Control 1	0	1	↑	XX	1	1	0	0	0	1	0	1	C5h	
	1	1	↑	XX	X	VMH [6:0]						31		
	1	1	↑	XX	X	VML [6:0]						3C		
VCOM Control 2	0	1	↑	XX	1	1	0	0	0	1	1	1	C7h	
	1	1	↑	XX	nVM	VMF [6:0]						C0		
NV Memory Write	0	1	↑	XX	1	1	0	1	0	0	0	0	D0h	
	1	1	↑	XX	X	X	X	X	X	PGM_ADR [2:0]			00	
	1	1	↑	XX	PGM_DATA [7:0]							XX		
NV Memory Protection Key	0	1	↑	XX	1	1	0	1	0	0	0	1	D1h	
	1	1	↑	XX	KEY [23:16]							55		
	1	1	↑	XX	KEY [15:8]							AA		
	1	1	↑	XX	KEY [7:0]							66		
NV Memory Status Read	0	1	↑	XX	1	1	0	1	0	0	1	0	D2h	
	1	↑	1	XX	X	X	X	X	X	X	X	X	XX	
	1	↑	1	XX	X	ID2_CNT [2:0]		X	ID1_CNT [2:0]		XX			
	1	↑	1	XX	BUSY	VMF_CNT [2:0]		X	ID3_CNT [2:0]		XX			

Read ID4	0	↑	1	XX	1	1	0	1	0	0	1	1	D3h	
	1	↑	1	XX	X	X	X	X	X	X	X	X	XX	
	1	↑	1	XX	0	0	0	0	0	0	0	0	00	
	1	↑	1	XX	1	0	0	1	0	0	1	1	93	
	1	↑	1	XX	0	1	0	0	0	0	0	1	41	
Positive Gamma Correction	0	1	↑	XX	1	1	1	0	0	0	0	0	E0h	
	1	1	↑	XX	X	X	X	X	VP0 [3:0]			08		
	1	1	↑	XX	X	X	VP1 [5:0]			0E				
	1	1	↑	XX	X	X	VP2 [5:0]			12				
	1	1	↑	XX	X	X	X	X	VP4 [3:0]			05		
	1	1	↑	XX	X	X	X	VP6 [4:0]			03			
	1	1	↑	XX	X	X	X	X	VP13 [3:0]			09		
	1	1	↑	XX	X	VP20 [6:0]			47					
	1	1	↑	XX	VP36 [3:0]			VP27 [3:0]			86			
	1	1	↑	XX	X	VP43 [6:0]			2B					
	1	1	↑	XX	X	X	X	X	VP50 [3:0]			0B		
	1	1	↑	XX	X	X	X	VP57 [4:0]			04			
	1	1	↑	XX	X	X	X	X	VP59 [3:0]			00		
	1	1	↑	XX	X	X	VP61 [5:0]			00				
	1	1	↑	XX	X	X	VP62 [5:0]			00				
	1	1	↑	XX	X	X	X	X	VP63 [3:0]			00		
	Negative Gamma Correction	0	1	↑	XX	1	1	1	0	0	0	0	1	E1h
		1	1	↑	XX	X	X	X	X	VN0 [3:0]			08	
1		1	↑	XX	X	X	VN1 [5:0]			1A				
1		1	↑	XX	X	X	VN2 [5:0]			20				
1		1	↑	XX	X	X	X	X	VN4 [3:0]			07		
1		1	↑	XX	X	X	X	VN6 [4:0]			0E			
1		1	↑	XX	X	X	X	X	VN13 [3:0]			05		
1		1	↑	XX	X	VN20 [6:0]			3A					
1		1	↑	XX	VN36 [3:0]			VN27 [3:0]			8A			
1		1	↑	XX	X	VN43 [6:0]			40					
1		1	↑	XX	X	X	X	X	VN50 [3:0]			04		
1		1	↑	XX	X	X	X	VN57 [4:0]			18			
1		1	↑	XX	X	X	X	X	VN59 [3:0]			0F		
1		1	↑	XX	X	X	VN61 [5:0]			3F				
1		1	↑	XX	X	X	VN62 [5:0]			3F				
1	1	↑	XX	X	X	X	X	VN63 [3:0]			0F			
Digital Gamma Control 1	0	1	↑	XX	1	1	1	0	0	0	1	0	E2h	
1 st Parameter	1	1	↑	XX	RCA0 [3:0]			BCA0 [3:0]			XX			
:	1	1	↑	XX	RCAx [3:0]			BCAx [3:0]			XX			
16 th Parameter	1	1	↑	XX	RCA15 [3:0]			BCA15 [3:0]			XX			
Digital Gamma Control 2	0	1	↑	XX	1	1	1	0	0	0	1	1	E3h	
1 st Parameter	1	1	↑	XX	RFA0 [3:0]			BFA0 [3:0]			XX			
:	1	1	↑	XX	RFAx [3:0]			BFAX [3:0]			XX			
64 th Parameter	1	1	↑	XX	RFA63 [3:0]			BFA63 [3:0]			XX			
Interface Control	0	1	↑	XX	1	1	1	1	0	1	1	0	F6h	
	1	1	↑	XX	MY_EOR	MX_EOR	MV_EOR	X	BGR_EOR	X	X	WEMODE	01	
	1	1	↑	XX	X	X	EPF [1:0]		X	X	MDT [1:0]		00	
	1	1	↑	XX	X	X	ENDIAN	X	DM [1:0]		RM	RIM	00	

7.4 初始化方法

用户所编的显示程序, 开始必须进行初始化, 否则模块无法正常显示, 过程请参考程序

7.5 程序举例:

//本程序针对晶联讯电子 JLX240-003 TFT 彩屏进行编程测试!

// IC: ILI9341

//液晶屏像素 240*320

//竖屏, 正常放置, IC 在下方

//接口方式: 8 位并行, 8080 时序

//版权所有: 深圳市晶联讯电子有限公司, 网址: www.jlxlcd.cn

```
#include <reg51.h>
```

```
sbit DC0 = P3^3;
```

```
sbit WR0 = P2^1;
```

```
sbit RD0 = P3^0;
```

```
sbit CS0 = P3^4;
```

```
sbit RST = P3^5;
```

```
sbit LEDA= P2^5;
```

```
sbit key =P2^0; //L active
```

```
#define uchar unsigned char
```

```
#define uint unsigned int
```

```
#define ulong unsigned long
```

```
#define red 0x5500 //0xf800
```

```
#define blue 0x00f5 //0x001f
```

```
#define green 0x07e0
```

```
#define background_color_blue blue //背景颜色
```

```
#define font_color 0xffff //字体颜色
```

```
#define background_color_red red //背景颜色
```

```
#define font_color_black 0x0000 //字体颜色
```

```
#define background_color_green green //背景颜色
```

```
unsigned char code pic1[];
```

```
unsigned
```

```
Graphic16[]={0x00, 0XFF, 0x00, 0Xff, 0x00, 0Xff, 0x00, 0Xff, 0x00, 0Xff, 0x00, 0Xff, 0x00, 0Xff, 0XFF, 0x00, 0XFF, 0x00, 0Xff, 0x00, 0Xff, 0x00, 0Xff, 0x00, 0Xff, 0x00, 0Xff, 0x00, 0Xff, 0x00};
```

```
/*延时*/
```

```
void delays(long i)
```

```
{
```

```
int j,k;
```

```
for(j=0;j<i;j++)
```

```
for(k=0;k<110;k++);
```

```
}
```

```
void Switch()
```

```
{
```

```
repeat:
```

```
if(key==1) goto repeat;
```

```
else delays(500);
```

```
if(key) goto repeat;
```

```
else;
```

```
}
```

```
void data_out(uchar data1)
```

```
{
    //8080 8bit interface
    CS0 = 0;
    DC0 = 1;
    RD0 = 1;
    P1=data1;
    WR0 = 0;
    WR0 = 1;
    CS0 = 1;
}

void comm_out(uchar com)
{
    //8080 8bit interface
    DC0 = 0;
    CS0 = 0;
    RD0 = 1;
    P1 = com;
    delays(50);
    WR0 = 0;
    WR0 = 1;
    CS0 = 1;
}

//LCD 初始化
void LCD_initial()
{
    RST=1;
    delays(10);
    RST=0;
    delays(2000);
    RST=1;
    delays(1200);

    //***** Start Initial Sequence *****//
    comm_out(0xCF);
    data_out(0x00);
    data_out(0xD9);
    data_out(0X30);

    comm_out(0xED);
    data_out(0x64);
    data_out(0x03);
    data_out(0X12);
    data_out(0X81);

    comm_out(0xE8);
    data_out(0x85);
    data_out(0x00);
    data_out(0x78);

    comm_out(0xCB);
    data_out(0x39);
    data_out(0x2C);
    data_out(0x00);
    data_out(0x34);
    data_out(0x02);

    comm_out(0xF7);
    data_out(0x20);
}
```

```
comm_out(0xEA);  
data_out(0x00);  
data_out(0x00);  
  
comm_out(0xC0); //Power control  
data_out(0x1B); //VRH[5:0]  
  
comm_out(0xC1); //Power control  
data_out(0x12); //SAP[2:0];BT[3:0]  
  
comm_out(0xC5); //VCM control  
data_out(0x32);  
data_out(0x3C);  
  
comm_out(0xC7); //VCM control2  
data_out(0x9D);  
  
comm_out(0x36); // Memory Access Control  
data_out(0x28); //0x08, 0x28  
  
comm_out(0x3A);  
data_out(0x55);  
  
comm_out(0xB1);  
data_out(0x00);  
data_out(0x1B);  
  
comm_out(0xB6); // Display Function Control  
data_out(0x00); //0x0a, 0x00  
data_out(0xe2); //0xa2, 0xe2  
  
comm_out(0xF6);  
data_out(0x01);  
data_out(0x30);  
  
comm_out(0xF2); // 3Gamma Function Disable  
data_out(0x00);  
  
comm_out(0x26); //Gamma curve selected  
data_out(0x01);  
  
comm_out(0xE0); //Set Gamma  
data_out(0x0F);  
data_out(0x24);  
data_out(0x1F);  
data_out(0x0B);  
data_out(0x0F);  
data_out(0x05);  
data_out(0x4A);  
data_out(0x96);  
data_out(0x39);  
data_out(0x07);  
data_out(0x11);  
data_out(0x03);  
data_out(0x11);  
data_out(0x0D);  
data_out(0x04);  
  
comm_out(0xE1); //Set Gamma
```

```
data_out(0x00);
data_out(0x1B);
data_out(0x20);
data_out(0x04);
data_out(0x10);
data_out(0x02);
data_out(0x35);
data_out(0x23);
data_out(0x46);
data_out(0x04);
data_out(0x0E);
data_out(0x0C);
data_out(0x2E);
data_out(0x32);
data_out(0x05);

comm_out(0x11); //Exit Sleep
delayms(120);
comm_out(0x29); //Display on
}

void lcd_address(int xs, int ys, x_total, y_total)
{
    int xs_h, xs_l, ys_h, ys_l, xe, ye, xe_h, xe_l, ye_h, ye_l;
    xs_h=xs/256;
    xs_l=xs%256;
    ys_h=ys/256;
    ys_l=ys%256;
    xe=xs+x_total-1;
    ye=ys+y_total-1;
    xe_h=xe/256;
    xe_l=xe%256;
    ye_h=ye/256;
    ye_l=ye%256;
    comm_out(0x2a); // Column start Address Upper 8bits
    data_out(xs_h);
    data_out(xs_l);
    data_out(xe_h);
    data_out(xe_l);
    comm_out(0x2b); // Row start Address Upper 8bits
    data_out(ys_h);
    data_out(ys_l);
    data_out(ye_h);
    data_out(ye_l);
}

void mono_data_out(char mono_data)
{
    char i, color_data_h, color_data_l;
    for(i=0; i<8; i++)
    {
        if(mono_data&0x80)
        {
            color_data_h=font_color/256;
            color_data_l=font_color%256;
        }
        else
        {
            color_data_h=background_color_red/256;
            color_data_l=background_color_red%256;
        }
    }
}
```

```
    }
    data_out(color_data_h);
    data_out(color_data_l);
    mono_data=mono_data<<1;
}
}

void mono_data_out1(char mono_data)
{
    char i, color_data_h, color_data_l;
    for(i=0;i<8;i++)
    {
        if(mono_data&0x80)
        {
            color_data_h=font_color/256;
            color_data_l=font_color%256;
        }
        else
        {
            color_data_h=background_color_blue/256;
            color_data_l=background_color_blue%256;
        }
        data_out(color_data_h);
        data_out(color_data_l);
        mono_data=mono_data<<1;
    }
}

void mono_data_out2(char mono_data)
{
    char i, color_data_h, color_data_l;
    for(i=0;i<8;i++)
    {
        if(mono_data&0x80)
        {
            color_data_h=font_color_black/256;
            color_data_l=font_color_black%256;
        }
        else
        {
            color_data_h=background_color_green/256;
            color_data_l=background_color_green%256;
        }
        data_out(color_data_h);
        data_out(color_data_l);
        mono_data=mono_data<<1;
    }
}

void display_32x32(uint x, uint y, uchar *dp)
{
    int i, j;
    lcd_address(x, y, 32, 32);
    comm_out(0x2c);
    for(i=0;i<32;i++)
    {
        for(j=0;j<4;j++)
        {
            mono_data_out(*dp);
            dp++;
        }
    }
}
```



```
    }
  }
}

void display_16x16(uint x,uint y,uchar *dp)
{
  int i,j;
  lcd_address(x,y,16,16);
  comm_out(0x2c);
  for(i=0;i<16;i++)
  {
    for(j=0;j<2;j++)
    {
      mono_data_out2(*dp);
      dp++;
    }
  }
}

void display_32x32_blue(uint x,uint y,uchar *dp)
{
  int i,j;
  lcd_address(x,y,32,32);
  comm_out(0x2c);
  for(i=0;i<32;i++)
  {
    for(j=0;j<4;j++)
    {
      mono_data_out1(*dp);
      dp++;
    }
  }
}

//显示黑底加一个白色外框
void display_black(void)
{
  int i,j,k;
  comm_out(0x2c);
  for(i=0;i<240;i++)
  {
    data_out(0xff);
    data_out(0xff);
  }
  for(i=0;i<318;i++)
  {
    for(k=0;k<1;k++)
    {
      data_out(0xff);
      data_out(0xff);
    }

    for(j=0;j<238;j++)
    {
      data_out(0x00);
      data_out(0x00);
    }
    for(k=0;k<1;k++)
    {
```



```

        data_out(0xff);
        data_out(0xff);
    }
}
for(i=0;i<240;i++)
{
    data_out(0xff);
    data_out(0xff);
}
}

```

```

//全屏显示一种颜色
void display_color(uchar color_H,uchar color_L)
{
    int i,j;
    comm_out(0x2c);
    for(i=0;i<320;i++)
    {
        for(j=0;j<240;j++)
        {
            data_out(color_H);
            data_out(color_L);
        }
    }
}

```

```

//显示图片
void display_image1(void)
{
    unsigned int i,j,t;
    comm_out(0x00);
    comm_out(0x2c);
    for(t=0;t<4;t++)
    {
        unsigned int k=0;
        for(i=0;i<80;i++)
        {
            for(j=0;j<240;j++)
            {
                data_out(pic1[k++]);
                data_out(pic1[k++]);
            }
        }
    }
}

```

```

char code huan[]={
/*-- 文字: 欢 --*/
/*-- 宋体 23; 此字体下对应的点阵为: 宽 x 高=31x31 --*/
/*-- 宽度不是 8 的倍数, 现调整为: 宽度 x 高度=32x31 --*/
0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x60, 0x00, 0x00, 0x00, 0x78, 0x00,
0x00, 0x00, 0x70, 0x00, 0x00, 0x18, 0xF0, 0x00, 0x7F, 0xFC, 0xE0, 0x00, 0x00, 0x38, 0xE0, 0x00,
0x00, 0x38, 0xE0, 0x38, 0x30, 0x79, 0xFF, 0xFC, 0x38, 0x71, 0xC0, 0x7C, 0x1C, 0x71, 0x9C, 0x60,
0x0E, 0x73, 0x9E, 0xE0, 0x07, 0xE3, 0x1C, 0xC0, 0x07, 0xE7, 0x3C, 0x00, 0x03, 0xE6, 0x3C, 0x00,
0x01, 0xC4, 0x3E, 0x00, 0x01, 0xE0, 0x3E, 0x00, 0x03, 0xF0, 0x3E, 0x00, 0x03, 0xF0, 0x76, 0x00,
0x07, 0x78, 0x77, 0x00, 0x0E, 0x3C, 0x77, 0x00, 0x0E, 0x3C, 0xE3, 0x80, 0x1C, 0x1D, 0xE3, 0x80,
0x38, 0x1D, 0xC1, 0xC0, 0x30, 0x03, 0x81, 0xE0, 0x60, 0x07, 0x00, 0xF0, 0x40, 0x0E, 0x00, 0x7C,
0x00, 0x38, 0x00, 0x7C, 0x00, 0xE0, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, };

```

```

char code ying[]={

```



```
0x0E, 0x1E, 0x3D, 0xF0, 0x0E, 0x3C, 0x3C, 0xFC, 0x0E, 0x78, 0x3C, 0x7C, 0x1F, 0xE0, 0x3C, 0x30,
0x1E, 0x00, 0x3C, 0x00, 0x0E, 0x00, 0x3C, 0x00, 0x00, 0x30, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, };
```

```
char code zhen[]={
/*-- 文字: 圳 --*/
/*-- 宋体 23; 此字体下对应的点阵为: 宽 x 高=32x31 --*/
0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x03, 0x03, 0x00, 0x38, 0x03, 0xC3, 0xC0, 0x3C,
0x03, 0xC3, 0x80, 0x3C, 0x03, 0x83, 0x8E, 0x38, 0x03, 0x83, 0x8F, 0x38, 0x03, 0x83, 0x8E, 0x38,
0x03, 0x83, 0x8E, 0x38, 0x03, 0x83, 0x8E, 0x38, 0x03, 0xBF, 0x8E, 0x38, 0x7F, 0xFF, 0x8E, 0x38,
0x03, 0x83, 0x8E, 0x38, 0x03, 0x83, 0x8E, 0x38, 0x03, 0x83, 0x8E, 0x38, 0x03, 0x83, 0x8E, 0x38,
0x03, 0x83, 0x8E, 0x38, 0x03, 0x87, 0x8E, 0x38, 0x03, 0x87, 0x8E, 0x38, 0x03, 0x87, 0x8E, 0x38,
0x03, 0xBF, 0x8E, 0x38, 0x03, 0xFF, 0x8E, 0x38, 0x0F, 0xE7, 0x0E, 0x38, 0x7F, 0x0F, 0x0E, 0x38,
0x3C, 0x0E, 0x0E, 0x38, 0x38, 0x1E, 0x0C, 0x38, 0x00, 0x3C, 0x00, 0x3C, 0x00, 0x78, 0x00, 0x3C,
0x00, 0xE0, 0x00, 0x3C, 0x01, 0xC0, 0x00, 0x30, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, };
```

```
char code shi[]={
/*-- 文字: 市 --*/
/*-- 宋体 23; 此字体下对应的点阵为: 宽 x 高=32x31 --*/
0x00, 0x00, 0x00, 0x00, 0x00, 0x0C, 0x00, 0x00, 0x00, 0x0F, 0x00, 0x00, 0x00, 0x07, 0x80, 0x00,
0x00, 0x03, 0xC0, 0x00, 0x00, 0x03, 0xC0, 0x38, 0x00, 0x01, 0x80, 0x7C, 0x3F, 0xFF, 0xFF, 0xFC,
0x00, 0x03, 0xC0, 0x00, 0x00, 0x03, 0xC0, 0x00, 0x00, 0x03, 0xC0, 0x00, 0x03, 0x83, 0xC1, 0xC0,
0x03, 0xFF, 0xFF, 0xE0, 0x03, 0x83, 0xC1, 0xC0, 0x03, 0x83, 0xC1, 0xC0, 0x03, 0x83, 0xC1, 0xC0,
0x03, 0x83, 0xC1, 0xC0, 0x03, 0x83, 0xC1, 0xC0, 0x03, 0x83, 0xC1, 0xC0, 0x03, 0x83, 0xC1, 0xC0,
0x03, 0x83, 0xC1, 0xC0, 0x03, 0x83, 0xC1, 0xC0, 0x03, 0x83, 0xC1, 0xC0, 0x03, 0x83, 0xC1, 0xC0,
0x03, 0x83, 0xFF, 0xC0, 0x03, 0x83, 0xC7, 0xC0, 0x03, 0x83, 0xC3, 0x80, 0x00, 0x03, 0xC0, 0x00,
0x00, 0x03, 0xC0, 0x00, 0x00, 0x03, 0xC0, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, };
```

```
/*简体汉字字库*/
char code jing[]={
/*-- 文字: 晶 --*/
/*-- 宋体 23; 此字体下对应的点阵为: 宽 x 高=32x31 --*/
0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x60, 0x03, 0x00, 0x00, 0x7F, 0xFF, 0x80,
0x00, 0x70, 0x07, 0x80, 0x00, 0x70, 0x07, 0x80, 0x00, 0x70, 0x07, 0x80, 0x00, 0x70, 0x07, 0x80, 0x00,
0x00, 0x7F, 0xFF, 0x80, 0x00, 0x70, 0x07, 0x80, 0x00, 0x70, 0x07, 0x80, 0x00, 0x70, 0x07, 0x80, 0x00,
0x00, 0x7F, 0xFF, 0x80, 0x00, 0x70, 0x07, 0x80, 0x00, 0x60, 0x00, 0x0C, 0x0E, 0x60, 0x30,
0x0F, 0xFF, 0x7F, 0xF8, 0x0E, 0x0E, 0x70, 0x78, 0x0E, 0x0E, 0x70, 0x78, 0x0E, 0x0E, 0x70, 0x78,
0x0E, 0x0E, 0x70, 0x78, 0x0F, 0xFE, 0x7F, 0xF8, 0x0F, 0xFE, 0x7F, 0xF8, 0x0E, 0x0E, 0x70, 0x78,
0x0E, 0x0E, 0x70, 0x78, 0x0E, 0x0E, 0x70, 0x78, 0x0F, 0xFE, 0x7F, 0xF8, 0x0F, 0xFE, 0x7F, 0xF8,
0x0E, 0x0E, 0x70, 0x78, 0x0C, 0x0C, 0x70, 0x70, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, };
```

```
char code lian[]={
/*-- 文字: 联 --*/
/*-- 宋体 23; 此字体下对应的点阵为: 宽 x 高=32x31 --*/
0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x01, 0xC0, 0xE0, 0x00, 0x06, 0xE1, 0xF0,
0x7F, 0xFF, 0xF1, 0xE0, 0x3F, 0xFF, 0x79, 0xC0, 0x0E, 0x38, 0x7B, 0x80, 0x0E, 0x38, 0x7B, 0x80,
0x0E, 0x38, 0x77, 0x30, 0x0E, 0x3F, 0xFF, 0xF8, 0x0E, 0x3F, 0xFF, 0xFC, 0x0F, 0xF8, 0x1E, 0x00,
0x0E, 0x38, 0x1E, 0x00, 0x0E, 0x38, 0x1E, 0x00, 0x0E, 0x38, 0x1E, 0x18, 0x0E, 0x38, 0x1E, 0x3C,
0x0F, 0xFF, 0xFF, 0xFE, 0x0F, 0xF8, 0x1E, 0x00, 0x0E, 0x38, 0x1F, 0x00, 0x0E, 0x38, 0x1F, 0x00,
0x0E, 0x3F, 0x1F, 0x00, 0x0E, 0x3F, 0x3F, 0x80, 0x0F, 0xF8, 0x3B, 0x80, 0x3F, 0xF8, 0x39, 0xC0,
0x7F, 0x38, 0x71, 0xE0, 0x38, 0x38, 0xF0, 0xF0, 0x00, 0x39, 0xE0, 0xF8, 0x00, 0x3B, 0xC0, 0x7E,
0x00, 0x3F, 0x80, 0x3E, 0x00, 0x3E, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, };
```

```
char code xun[]={
/*-- 文字: 讯 --*/
/*-- 宋体 23; 此字体下对应的点阵为: 宽 x 高=32x31 --*/
0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x0E, 0x00, 0x00, 0x00, 0x07, 0x80, 0x00, 0xC0,
0x07, 0xDF, 0xFF, 0xE0, 0x03, 0xDF, 0xFF, 0xE0, 0x01, 0xC0, 0x81, 0xC0, 0x01, 0xC0, 0xF1, 0xC0,
0x00, 0x00, 0xE1, 0xC0, 0x00, 0x00, 0xE1, 0xC0, 0x00, 0x00, 0xE1, 0xC0, 0x00, 0xC0, 0xE1, 0xC0,
0x7F, 0xE0, 0xE1, 0xC0, 0x3F, 0xE0, 0xEF, 0xC0, 0x01, 0xFF, 0xFF, 0xC0, 0x01, 0xDF, 0xFF, 0xC0,
0x01, 0xC0, 0xE1, 0xC0, 0x01, 0xC0, 0xE1, 0xE0, 0x01, 0xC0, 0xE1, 0xE0, 0x01, 0xC0, 0xE1, 0xE0, };
```



```
0x00, 0x3C, 0x30, 0x00, 0x00, 0x38, 0x3C, 0x00, 0x00, 0x70, 0x1E, 0x00, 0x00, 0xF0, 0x0F, 0x00,
0x00, 0xE0, 0x07, 0x80, 0x03, 0xC0, 0x07, 0xC0, 0x07, 0xFF, 0xFF, 0xC0, 0x07, 0xFF, 0x83, 0xC0,
0x03, 0x80, 0x03, 0xC0, 0x00, 0x00, 0x01, 0xC0, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, };
```

```
char code si[]={
/*-- 文字: 司 --*/
/*-- 宋体 23; 此字体下对应的点阵为: 宽 x 高=32x31 --*/
0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0xE0,
0x07, 0xFF, 0xFF, 0xF0, 0x00, 0x00, 0x00, 0xE0, 0x00, 0x00, 0x00, 0xE0, 0x00, 0x00, 0x00, 0xE0,
0x00, 0x00, 0x18, 0xE0, 0x00, 0x00, 0x3C, 0xE0, 0x1F, 0xFF, 0xFE, 0xE0, 0x00, 0x00, 0x00, 0xE0,
0x00, 0x00, 0x00, 0xE0, 0x03, 0x00, 0xE0, 0xE0, 0x03, 0xFF, 0xF0, 0xE0, 0x03, 0xC0, 0xF0, 0xE0,
0x03, 0xC0, 0xE0, 0xE0, 0x03, 0xC0, 0xE0, 0xE0, 0x03, 0xC0, 0xE0, 0xE0, 0x03, 0xC0, 0xE0, 0xE0,
0x03, 0xC0, 0xE0, 0xE0, 0x03, 0xFF, 0xE0, 0xE0, 0x03, 0xC0, 0xE0, 0xE0, 0x03, 0xC0, 0xF0, 0xE0,
0x03, 0x80, 0x00, 0xE0, 0x00, 0x00, 0x00, 0xE0, 0x00, 0x00, 0x1F, 0xE0, 0x00, 0x00, 0x1F, 0xE0,
0x00, 0x00, 0x03, 0xE0, 0x00, 0x00, 0x03, 0xC0, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, };
```

```
char code shi1[]={
/*-- 文字: 是 --*/
/*-- 宋体 23; 此字体下对应的点阵为: 宽 x 高=31x31 --*/
/*-- 宽度不是 8 的倍数, 现调整为: 宽度 x 高度=32x31 --*/
0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0xC0, 0x06, 0x00, 0x00, 0xE0, 0x0F, 0x00,
0x00, 0xFF, 0xFF, 0x80, 0x00, 0xE0, 0x0E, 0x00, 0x00, 0xE0, 0x0E, 0x00, 0x00, 0xE0, 0x0E, 0x00,
0x00, 0xFF, 0xFE, 0x00, 0x00, 0xE0, 0x0E, 0x00, 0x00, 0xE0, 0x0E, 0x00, 0x00, 0xE0, 0x0E, 0x00,
0x00, 0xFF, 0xFE, 0x00, 0x00, 0xE0, 0x0F, 0x00, 0x00, 0xC0, 0x00, 0x60, 0x00, 0x00, 0x00, 0xF0,
0x3F, 0xFF, 0xFF, 0xF8, 0x00, 0x03, 0x80, 0x0C, 0x00, 0xE3, 0x80, 0x00, 0x00, 0xF3, 0x80, 0x00,
0x01, 0xE3, 0x81, 0xE0, 0x01, 0xC3, 0xFF, 0xF0, 0x01, 0xC3, 0x80, 0x00, 0x03, 0xE3, 0x80, 0x00,
0x03, 0xF3, 0x80, 0x00, 0x07, 0x3F, 0x80, 0x00, 0x0E, 0x0F, 0x80, 0x00, 0x1C, 0x03, 0xFF, 0xFC,
0x38, 0x00, 0x7F, 0xF0, 0x70, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, };
```

```
char code ji[]={
/*-- 文字: 集 --*/
/*-- 宋体 23; 此字体下对应的点阵为: 宽 x 高=31x31 --*/
/*-- 宽度不是 8 的倍数, 现调整为: 宽度 x 高度=32x31 --*/
0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0xF3, 0x80, 0x00, 0x00, 0xF1, 0xC0, 0x00,
0x01, 0xE1, 0xE0, 0x00, 0x01, 0xC0, 0xC0, 0xE0, 0x03, 0xFF, 0xFF, 0xF0, 0x03, 0x81, 0xC0, 0x30,
0x07, 0x81, 0xC0, 0x00, 0x0F, 0x81, 0xC1, 0xC0, 0x1F, 0xFF, 0xFF, 0xE0, 0x3B, 0x81, 0xC0, 0x00,
0x73, 0x81, 0xC1, 0x80, 0x63, 0xFF, 0xFF, 0xC0, 0x03, 0x81, 0xC0, 0xC0, 0x03, 0x81, 0xC0, 0x00,
0x03, 0x81, 0xC0, 0xE0, 0x03, 0xFF, 0xFF, 0xF0, 0x03, 0x83, 0x80, 0x00, 0x03, 0x03, 0xC0, 0x18,
0x00, 0x03, 0x80, 0x3C, 0x7F, 0xFF, 0xFF, 0xEC, 0x00, 0x1F, 0xF0, 0x00, 0x00, 0x3F, 0xB8, 0x00,
0x00, 0x73, 0x9C, 0x00, 0x01, 0xE3, 0x8F, 0x00, 0x03, 0x83, 0x87, 0xC0, 0x0F, 0x03, 0x81, 0xFE,
0x3C, 0x03, 0x80, 0x78, 0x70, 0x03, 0x80, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, };
```

```
char code yan[]={
/*-- 文字: 研 --*/
/*-- 宋体 23; 此字体下对应的点阵为: 宽 x 高=31x31 --*/
/*-- 宽度不是 8 的倍数, 现调整为: 宽度 x 高度=32x31 --*/
0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x38,
0x00, 0x3F, 0xFF, 0xFC, 0x7F, 0xFC, 0xE3, 0x80, 0x07, 0x00, 0xE3, 0x80, 0x07, 0x00, 0xE3, 0x80,
0x07, 0x00, 0xE3, 0x80, 0x0E, 0x00, 0xE3, 0x80, 0x0E, 0x00, 0xE3, 0x80, 0x0E, 0x30, 0xE3, 0x80,
0x1F, 0xF8, 0xE3, 0x80, 0x1E, 0x78, 0xE3, 0x98, 0x1E, 0x70, 0xE3, 0xBC, 0x3E, 0x7F, 0xFF, 0xE4,
0x3E, 0x70, 0xE3, 0x80, 0x7E, 0x70, 0xE3, 0x80, 0x6E, 0x70, 0xE3, 0x80, 0xCE, 0x70, 0xE3, 0x80,
0x0E, 0x70, 0xE3, 0x80, 0x0E, 0x71, 0xC3, 0x80, 0x0F, 0xF1, 0xC3, 0x80, 0x0E, 0x73, 0xC3, 0x80,
0x0E, 0x73, 0x83, 0x80, 0x0E, 0x07, 0x03, 0x80, 0x00, 0x0E, 0x03, 0xC0, 0x00, 0x1C, 0x03, 0xC0,
0x00, 0x38, 0x03, 0xC0, 0x00, 0xE0, 0x03, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, };
```

```
char code fa[]={
/*-- 文字: 发 --*/
/*-- 宋体 23; 此字体下对应的点阵为: 宽 x 高=31x31 --*/
```

```
/*-- 宽度不是8的倍数，现调整为：宽度 x 高度=32x31 --*/
0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x0E, 0x30, 0x00, 0x06, 0x0F, 0x1C, 0x00,
0x07, 0x9E, 0x0F, 0x00, 0x07, 0x9E, 0x07, 0x80, 0x07, 0x1E, 0x07, 0x80, 0x0F, 0x1C, 0x03, 0x80,
0x0E, 0x1C, 0x00, 0x00, 0x1E, 0x1C, 0x00, 0x78, 0x3F, 0xFF, 0xFF, 0xFC, 0x0C, 0x3C, 0x00, 0x00,
0x00, 0x38, 0x00, 0x00, 0x00, 0x38, 0x03, 0x00, 0x00, 0x38, 0x03, 0x80, 0x00, 0x7F, 0xFF, 0xC0,
0x00, 0x76, 0x07, 0x80, 0x00, 0x76, 0x07, 0x00, 0x00, 0xE3, 0x0E, 0x00, 0x00, 0xE3, 0x9E, 0x00,
0x01, 0xC1, 0x9C, 0x00, 0x01, 0xC1, 0xF8, 0x00, 0x03, 0x80, 0xF8, 0x00, 0x03, 0x80, 0xF0, 0x00,
0x07, 0x01, 0xFC, 0x00, 0x0E, 0x03, 0xDF, 0x00, 0x1C, 0x0F, 0x0F, 0xC0, 0x38, 0x1C, 0x03, 0xFC,
0x70, 0xF0, 0x00, 0xF8, 0x63, 0xC0, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, };
```

```
char code shen2[]={
/*-- 文字：生 --*/
/*-- 宋体 23；此字体下对应的点阵为：宽 x 高=31x31 --*/
/*-- 宽度不是8的倍数，现调整为：宽度 x 高度=32x31 --*/
0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x03, 0x80, 0x00, 0x00, 0x03, 0xC0, 0x00,
0x01, 0xC3, 0x80, 0x00, 0x01, 0xE3, 0x80, 0x00, 0x03, 0xC3, 0x80, 0x00, 0x03, 0xC3, 0x80, 0x00,
0x03, 0x83, 0x80, 0xE0, 0x07, 0x83, 0x81, 0xF0, 0x07, 0xFF, 0xFF, 0xB8, 0x07, 0x03, 0x80, 0x00,
0x0E, 0x03, 0x80, 0x00, 0x0E, 0x03, 0x80, 0x00, 0x1C, 0x03, 0x80, 0x00, 0x18, 0x03, 0x80, 0x00,
0x30, 0x03, 0x81, 0x80, 0x30, 0x03, 0x83, 0xC0, 0x03, 0xFF, 0xFF, 0xE0, 0x00, 0x03, 0x80, 0x00,
0x00, 0x03, 0x80, 0x00, 0x00, 0x03, 0x80, 0x00, 0x00, 0x03, 0x80, 0x00, 0x03, 0x80, 0x00, 0x03, 0x80, 0x00,
0x00, 0x03, 0x80, 0x00, 0x00, 0x03, 0x80, 0x00, 0x00, 0x03, 0x80, 0x38, 0x3F, 0xFF, 0xFF, 0xFC,
0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, };
```

```
char code chan[]={
/*-- 文字：产 --*/
/*-- 宋体 23；此字体下对应的点阵为：宽 x 高=31x31 --*/
/*-- 宽度不是8的倍数，现调整为：宽度 x 高度=32x31 --*/
0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x0F, 0x00, 0x00, 0x00, 0x03, 0x80, 0x00,
0x00, 0x03, 0xC0, 0x00, 0x00, 0x03, 0xC0, 0x30, 0x00, 0x01, 0x80, 0x78, 0x3F, 0xFF, 0xFF, 0xDC,
0x00, 0x60, 0x1C, 0x00, 0x00, 0x30, 0x1F, 0x00, 0x00, 0x3C, 0x1C, 0x00, 0x00, 0x1C, 0x38, 0x00,
0x00, 0x1C, 0x38, 0x00, 0x0C, 0x1C, 0x70, 0x70, 0x0F, 0xFF, 0xFF, 0xF8, 0x0E, 0x00, 0x00, 0x0C,
0x0E, 0x00, 0x00, 0x00, 0x0E, 0x00, 0x00, 0x00, 0x0E, 0x00, 0x00, 0x00, 0x0E, 0x00, 0x00, 0x00,
0x0E, 0x00, 0x00, 0x00, 0x0E, 0x00, 0x00, 0x00, 0x0E, 0x00, 0x00, 0x0E, 0x00, 0x00, 0x00, 0x00,
0x1C, 0x00, 0x00, 0x00, 0x1C, 0x00, 0x00, 0x00, 0x18, 0x00, 0x00, 0x00, 0x38, 0x00, 0x00, 0x00,
0x70, 0x00, 0x00, 0x00, 0x60, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, };
```

```
char code d[]={
/*-- 文字：、 --*/
/*-- 宋体 23；此字体下对应的点阵为：宽 x 高=31x31 --*/
/*-- 宽度不是8的倍数，现调整为：宽度 x 高度=32x31 --*/
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,
0x10, 0x00, 0x00, 0x00, 0x1F, 0x00, 0x00, 0x00, 0x07, 0x80, 0x00, 0x00, 0x03, 0xE0, 0x00, 0x00,
0x01, 0xE0, 0x00, 0x00, 0x01, 0xF0, 0x00, 0x00, 0x00, 0xF0, 0x00, 0x00, 0x00, 0x60, 0x00, 0x00,
0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, };
```

```
char code xiao[]={
/*-- 文字：销 --*/
/*-- 宋体 23；此字体下对应的点阵为：宽 x 高=31x31 --*/
/*-- 宽度不是8的倍数，现调整为：宽度 x 高度=32x31 --*/
0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x07, 0x00, 0x1E, 0x00, 0x07, 0xC0, 0x1E, 0x00,
0x07, 0x86, 0x1C, 0x70, 0x07, 0x03, 0x9C, 0x78, 0x0F, 0x3B, 0xDC, 0xF8, 0x0E, 0x7D, 0xFC, 0xE0,
0x0F, 0xED, 0xFD, 0xC0, 0x1C, 0x00, 0xDD, 0x80, 0x1C, 0x06, 0x1F, 0x30, 0x18, 0x37, 0xFF, 0xF8,
0x3F, 0xFF, 0x80, 0x78, 0x33, 0x8F, 0x80, 0x70, 0x63, 0x87, 0x80, 0x70, 0x63, 0x87, 0x80, 0x70,
0x03, 0x9F, 0xFF, 0xF0, 0x03, 0xBF, 0x80, 0x70, 0x7F, 0xEF, 0x80, 0x70, 0x03, 0x87, 0x80, 0x70,
0x03, 0x87, 0x80, 0x70, 0x03, 0x87, 0xFF, 0xF0, 0x03, 0x87, 0x80, 0x70, 0x03, 0xB7, 0x80, 0x70,
```

```
0x03, 0xF7, 0x80, 0x70, 0x03, 0xC7, 0x80, 0x70, 0x07, 0x87, 0x80, 0x70, 0x07, 0x87, 0x87, 0xF0,
0x03, 0x07, 0x81, 0xE0, 0x00, 0x07, 0x01, 0xC0, 0x00, 0x00, 0x00, 0x00, };
```

```
char code shou[]={
/*-- 文字: 售 --*/
/*-- 宋体 23; 此字体下对应的点阵为: 宽 x 高=31x31 --*/
/*-- 宽度不是 8 的倍数, 现调整为: 宽度 x 高度=32x31 --*/
0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0xE3, 0x80, 0x00, 0x00, 0xF1, 0xC0, 0x00,
0x01, 0xE1, 0xE0, 0x00, 0x01, 0xC1, 0xE0, 0x60, 0x03, 0xC0, 0xC0, 0xF0, 0x03, 0xFF, 0xFF, 0xD8,
0x07, 0x81, 0xC0, 0x00, 0x0F, 0x81, 0xC1, 0xC0, 0x0F, 0x81, 0xC3, 0xE0, 0x1F, 0xFF, 0xFF, 0x60,
0x3B, 0x81, 0xC0, 0x00, 0x73, 0x81, 0xC3, 0xC0, 0x63, 0xFF, 0xFF, 0xE0, 0x03, 0x81, 0xC0, 0x00,
0x03, 0x81, 0xC0, 0x30, 0x03, 0x81, 0xC0, 0x78, 0x03, 0xFF, 0xFF, 0xCC, 0x03, 0x80, 0x00, 0x00,
0x01, 0x80, 0x01, 0x80, 0x01, 0xFF, 0xFF, 0xC0, 0x01, 0xC0, 0x03, 0xC0, 0x01, 0xC0, 0x03, 0xC0,
0x01, 0xC0, 0x03, 0xC0, 0x01, 0xC0, 0x03, 0xC0, 0x01, 0xC0, 0x03, 0xC0, 0x01, 0xC0, 0x03, 0xC0,
0x01, 0xFF, 0xFF, 0xC0, 0x01, 0xC0, 0x03, 0x80, 0x00, 0x00, 0x00, 0x00, };
```

```
char code yu[]={
/*-- 文字: 于 --*/
/*-- 宋体 23; 此字体下对应的点阵为: 宽 x 高=31x31 --*/
/*-- 宽度不是 8 的倍数, 现调整为: 宽度 x 高度=32x31 --*/
0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x01, 0x80,
0x00, 0x00, 0x03, 0xC0, 0x07, 0xFF, 0xFE, 0x60, 0x00, 0x03, 0x80, 0x00, 0x00, 0x03, 0x80, 0x00,
0x00, 0x03, 0x80, 0x00, 0x00, 0x03, 0x80, 0x00, 0x00, 0x03, 0x80, 0x00, 0x00, 0x03, 0x80, 0x00,
0x00, 0x03, 0x80, 0x30, 0x00, 0x03, 0x80, 0x78, 0x7F, 0xFF, 0xFF, 0xCC, 0x00, 0x03, 0x80, 0x00,
0x00, 0x03, 0x80, 0x00, 0x00, 0x03, 0x80, 0x00, 0x00, 0x03, 0x80, 0x00, 0x00, 0x03, 0x80, 0x00,
0x00, 0x03, 0x80, 0x00, 0x00, 0x03, 0x80, 0x00, 0x00, 0x03, 0x80, 0x00, 0x00, 0x03, 0x80, 0x00,
0x00, 0x03, 0x80, 0x00, 0x00, 0x03, 0x80, 0x00, 0x00, 0x7F, 0x80, 0x00, 0x00, 0x1F, 0x80, 0x00,
0x00, 0x0F, 0x00, 0x00, 0x00, 0x06, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, };
```

```
char code yi[]={
/*-- 文字: 一 --*/
/*-- 宋体 23; 此字体下对应的点阵为: 宽 x 高=31x31 --*/
/*-- 宽度不是 8 的倍数, 现调整为: 宽度 x 高度=32x31 --*/
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, 0x38, 0x7F, 0xFF, 0xFF, 0xFC, 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, };
```

```
char code ti[]={
/*-- 文字: 体 --*/
/*-- 宋体 23; 此字体下对应的点阵为: 宽 x 高=31x31 --*/
/*-- 宽度不是 8 的倍数, 现调整为: 宽度 x 高度=32x31 --*/
0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0xE0, 0x38, 0x00, 0x00, 0xF0, 0x3C, 0x00,
0x01, 0xE0, 0x38, 0x00, 0x01, 0xE0, 0x38, 0x00, 0x01, 0xC0, 0x38, 0x00, 0x03, 0xC0, 0x38, 0x10,
0x03, 0x80, 0x38, 0x38, 0x07, 0xBF, 0xFF, 0xFC, 0x07, 0x00, 0xFC, 0x00, 0x0F, 0xC0, 0xFE, 0x00,
0x0F, 0x80, 0xFE, 0x00, 0x1F, 0x81, 0xFF, 0x00, 0x1B, 0x81, 0xFF, 0x00, 0x3B, 0x83, 0xBB, 0x80,
0x73, 0x87, 0xBB, 0x80, 0x63, 0x87, 0x39, 0xC0, 0x03, 0x8E, 0x39, 0xE0, 0x03, 0x9C, 0x38, 0xF0,
0x03, 0x98, 0x38, 0xF8, 0x03, 0xB0, 0x39, 0xFC, 0x03, 0xEF, 0xFF, 0xFC, 0x03, 0xC0, 0x38, 0x60,
0x03, 0x80, 0x38, 0x00, 0x03, 0x80, 0x38, 0x00, 0x03, 0x80, 0x38, 0x00, 0x03, 0x80, 0x38, 0x00,
0x03, 0x80, 0x38, 0x00, 0x03, 0x80, 0x38, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, };
```

```
char code de[]={
/*-- 文字: 的 --*/
/*-- 宋体 23; 此字体下对应的点阵为: 宽 x 高=31x31 --*/
/*-- 宽度不是 8 的倍数, 现调整为: 宽度 x 高度=32x31 --*/
0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x01, 0xC0, 0x38, 0x00, 0x01, 0xE0, 0x3E, 0x00,
```



```
0x01, 0xC0, 0x3C, 0x00, 0x01, 0xC0, 0x38, 0x00, 0x03, 0x80, 0x78, 0x00, 0x1B, 0x9C, 0x70, 0x30,
0x1F, 0xFE, 0xFF, 0xF8, 0x1C, 0x1C, 0xE0, 0x78, 0x1C, 0x1C, 0xE0, 0x70, 0x1C, 0x1D, 0xC0, 0x70,
0x1C, 0x1F, 0x80, 0x70, 0x1C, 0x1F, 0x00, 0x70, 0x1C, 0x1E, 0xE0, 0x70, 0x1C, 0x1E, 0x70, 0x70,
0x1C, 0x1C, 0x78, 0x70, 0x1F, 0xFC, 0x38, 0x70, 0x1C, 0x1C, 0x3C, 0x70, 0x1C, 0x1C, 0x38, 0x70,
0x1C, 0x1C, 0x00, 0x70, 0x1C, 0x1C, 0x00, 0x70, 0x1C, 0x1C, 0x00, 0x70, 0x1C, 0x1C, 0x00, 0x70,
0x1C, 0x1C, 0x00, 0xF0, 0x1C, 0x1C, 0x00, 0xF0, 0x1F, 0xFC, 0x38, 0xE0, 0x1C, 0x1C, 0x0F, 0xE0,
0x1C, 0x18, 0x03, 0xC0, 0x18, 0x00, 0x03, 0x80, 0x00, 0x00, 0x00, 0x00, };
```

```
char code cong[]={
/*-- 文字: 从 --*/
/*-- 宋体 23; 此字体下对应的点阵为: 宽 x 高=31x31 --*/
/*-- 宽度不是 8 的倍数, 现调整为: 宽度 x 高度=32x31 --*/
0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0xC0, 0x30, 0x00, 0x00, 0xF0, 0x3C, 0x00,
0x00, 0xE0, 0x38, 0x00, 0x00, 0xE0, 0x38, 0x00, 0x00, 0xE0, 0x38, 0x00, 0x00, 0xE0, 0x38, 0x00,
0x00, 0xE0, 0x38, 0x00, 0x00, 0xE0, 0x38, 0x00, 0x00, 0xE0, 0x3C, 0x00, 0x00, 0xE0, 0x3C, 0x00,
0x01, 0xE0, 0x7C, 0x00, 0x01, 0xC0, 0x7C, 0x00, 0x01, 0xC0, 0x7C, 0x00, 0x01, 0xF0, 0x7E, 0x00,
0x01, 0xF8, 0x7E, 0x00, 0x03, 0xDC, 0x76, 0x00, 0x03, 0x9E, 0xE7, 0x00, 0x03, 0x9E, 0xE7, 0x00,
0x03, 0x8E, 0xE7, 0x00, 0x07, 0x0F, 0xC3, 0x80, 0x07, 0x01, 0xC3, 0x80, 0x0E, 0x03, 0x81, 0xC0,
0x0C, 0x07, 0x01, 0xE0, 0x1C, 0x0E, 0x00, 0xF0, 0x38, 0x0E, 0x00, 0x78, 0x30, 0x38, 0x00, 0x7C,
0x60, 0x70, 0x00, 0x38, 0x00, 0xE0, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, };
```

```
char code shi2[]={
/*-- 文字: 事 --*/
/*-- 宋体 23; 此字体下对应的点阵为: 宽 x 高=31x31 --*/
/*-- 宽度不是 8 的倍数, 现调整为: 宽度 x 高度=32x31 --*/
0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x03, 0x80, 0x00, 0x00, 0x03, 0xC0, 0x00,
0x00, 0x03, 0x80, 0x70, 0x7F, 0xFF, 0xFF, 0xF8, 0x00, 0x03, 0x80, 0x0C, 0x00, 0x03, 0x80, 0x00,
0x03, 0x83, 0x83, 0xC0, 0x03, 0xFF, 0xFF, 0xC0, 0x03, 0x83, 0x83, 0x80, 0x03, 0x83, 0x83, 0x80,
0x03, 0x83, 0x83, 0x80, 0x03, 0xFF, 0xFF, 0x80, 0x03, 0x03, 0x80, 0x00, 0x00, 0x03, 0x83, 0x80,
0x0F, 0xFF, 0xFF, 0xC0, 0x00, 0x03, 0x83, 0x80, 0x00, 0x03, 0x83, 0xB8, 0x7F, 0xFF, 0xFF, 0xFC,
0x00, 0x03, 0x83, 0x8C, 0x00, 0x03, 0x83, 0x80, 0x00, 0x03, 0x83, 0x80, 0x0F, 0xFF, 0xFF, 0x80,
0x00, 0x03, 0x83, 0x80, 0x00, 0x03, 0x83, 0x00, 0x00, 0x03, 0x80, 0x00, 0x00, 0x7F, 0x80, 0x00,
0x00, 0x0F, 0x80, 0x00, 0x00, 0x07, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, };
```

```
char code yie[]={
/*-- 文字: 液 --*/
/*-- 宋体 23; 此字体下对应的点阵为: 宽 x 高=31x31 --*/
/*-- 宽度不是 8 的倍数, 现调整为: 宽度 x 高度=32x31 --*/
0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x70, 0x00, 0x08, 0x00, 0x38, 0x00,
0x0E, 0x00, 0x3C, 0x30, 0x07, 0x80, 0x1C, 0x38, 0x07, 0xBF, 0xFF, 0xFC, 0x03, 0x82, 0x10, 0x04,
0x03, 0x87, 0x9C, 0x00, 0x00, 0x07, 0xBE, 0x00, 0x60, 0x67, 0x38, 0x60, 0x70, 0xCE, 0x38, 0xF0,
0x3C, 0xCE, 0x3F, 0xF0, 0x1E, 0xDC, 0x70, 0xE0, 0x1F, 0x9E, 0x7C, 0xE0, 0x0D, 0xBE, 0xEE, 0xE0,
0x03, 0xBC, 0xEF, 0xC0, 0x03, 0xFD, 0xE7, 0xC0, 0x03, 0xFD, 0xF1, 0xC0, 0x07, 0xDF, 0x33, 0x80,
0x07, 0x9C, 0x3B, 0x80, 0x6E, 0x1C, 0x1F, 0x80, 0x3E, 0x1C, 0x1F, 0x00, 0x0E, 0x1C, 0x0E, 0x00,
0x0E, 0x1C, 0x1F, 0x00, 0x0E, 0x1C, 0x3F, 0xC0, 0x1E, 0x1C, 0x7B, 0xE0, 0x1E, 0x1C, 0xF0, 0xFC,
0x1E, 0x1F, 0xC0, 0x7C, 0x00, 0x1F, 0x80, 0x30, 0x00, 0x00, 0x00, 0x00, };
```

```
char code xian1[]={
/*-- 文字: 显 --*/
/*-- 宋体 23; 此字体下对应的点阵为: 宽 x 高=31x31 --*/
/*-- 宽度不是 8 的倍数, 现调整为: 宽度 x 高度=32x31 --*/
0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x03, 0x80, 0x03, 0x80,
0x03, 0xFF, 0xFF, 0xC0, 0x03, 0xC0, 0x03, 0x80, 0x01, 0xC0, 0x03, 0x80, 0x01, 0xC0, 0x03, 0x80,
0x01, 0xC0, 0x03, 0x80, 0x01, 0xFF, 0xFF, 0x80, 0x01, 0xC0, 0x03, 0x80, 0x01, 0xC0, 0x03, 0x80,
0x03, 0xC0, 0x03, 0x80, 0x03, 0xFF, 0xFF, 0x80, 0x03, 0xC0, 0x03, 0x80, 0x03, 0x98, 0x62, 0x00,
0x00, 0x1E, 0x78, 0x00, 0x0C, 0x1C, 0x78, 0xE0, 0x0E, 0x1C, 0x70, 0xF0, 0x07, 0x1C, 0x71, 0xF0,
0x03, 0x9C, 0x71, 0xC0, 0x03, 0xDC, 0x73, 0x80, 0x01, 0xDC, 0x77, 0x00, 0x01, 0xFC, 0x7E, 0x00,
0x01, 0xDC, 0x7C, 0x00, 0x00, 0x1C, 0x78, 0x00, 0x00, 0x1C, 0x70, 0x70, 0x00, 0x1C, 0x70, 0xF8,
0x7F, 0xFF, 0xFF, 0x8C, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, };
```

```
char code shi3[]={
/*-- 文字: 示 --*/
/*-- 宋体 23; 此字体下对应的点阵为: 宽 x 高=31x31 --*/
/*-- 宽度不是 8 的倍数, 现调整为: 宽度 x 高度=32x31 --*/
0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x01, 0xC0,
0x0F, 0xFF, 0xFF, 0xE0, 0x00, 0x00, 0x00, 0x20, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00,
0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x38,
0x7F, 0xFF, 0xFF, 0xFC, 0x00, 0x03, 0x80, 0x04, 0x00, 0x03, 0x80, 0x00, 0x00, 0xE3, 0x80, 0x00,
0x00, 0xFB, 0x9C, 0x00, 0x00, 0xE3, 0x8E, 0x00, 0x01, 0xE3, 0x87, 0x00, 0x03, 0xC3, 0x83, 0x80,
0x03, 0x83, 0x81, 0xC0, 0x07, 0x03, 0x81, 0xE0, 0x0E, 0x03, 0x80, 0xF0, 0x1C, 0x03, 0x80, 0x78,
0x18, 0x03, 0x80, 0x78, 0x30, 0x03, 0x80, 0x30, 0x60, 0x03, 0x80, 0x00, 0x00, 0x7F, 0x80, 0x00,
0x00, 0x0F, 0x80, 0x00, 0x00, 0x07, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, };
```

```
char code ping[]={
/*-- 文字: 屏 --*/
/*-- 宋体 23; 此字体下对应的点阵为: 宽 x 高=31x31 --*/
/*-- 宽度不是 8 的倍数, 现调整为: 宽度 x 高度=32x31 --*/
0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x07, 0x00, 0x00, 0xE0,
0x07, 0xFF, 0xFF, 0xF0, 0x07, 0x00, 0x00, 0xE0, 0x07, 0x00, 0x00, 0xE0, 0x07, 0x00, 0x00, 0xE0,
0x07, 0xFF, 0xFF, 0xE0, 0x07, 0x00, 0x06, 0xE0, 0x07, 0x0E, 0x0F, 0x00, 0x07, 0x07, 0x0F, 0x00,
0x07, 0x07, 0x9C, 0x00, 0x07, 0x03, 0x18, 0xE0, 0x07, 0xFF, 0xFF, 0xF0, 0x07, 0x07, 0x0E, 0x30,
0x0F, 0x07, 0x0E, 0x00, 0x0E, 0x07, 0x0E, 0x00, 0x0E, 0x07, 0x0E, 0x00, 0x0E, 0x07, 0x0E, 0x70,
0x0F, 0xFF, 0xFF, 0xF8, 0x0E, 0x07, 0x0E, 0x08, 0x1C, 0x0E, 0x0E, 0x00, 0x1C, 0x0E, 0x0E, 0x00,
0x18, 0x0E, 0x0E, 0x00, 0x38, 0x1C, 0x0E, 0x00, 0x30, 0x3C, 0x0E, 0x00, 0x70, 0x78, 0x0E, 0x00,
0x60, 0xE0, 0x0E, 0x00, 0x03, 0xC0, 0x18, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, };
```

```
char code ji2[]={
/*-- 文字: 及 --*/
/*-- 宋体 23; 此字体下对应的点阵为: 宽 x 高=31x31 --*/
/*-- 宽度不是 8 的倍数, 现调整为: 宽度 x 高度=32x31 --*/
0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x0E, 0x00,
0x07, 0xFF, 0xFF, 0x00, 0x00, 0x3C, 0x0F, 0x00, 0x00, 0x3C, 0x1E, 0x00, 0x00, 0x38, 0x1C, 0x00,
0x00, 0x38, 0x1C, 0x00, 0x00, 0x38, 0x3C, 0x00, 0x00, 0x38, 0x38, 0x00, 0x00, 0x3C, 0x78, 0xC0,
0x00, 0x7C, 0x7F, 0xE0, 0x00, 0x7E, 0x31, 0xE0, 0x00, 0x76, 0x01, 0xC0, 0x00, 0x76, 0x03, 0x80,
0x00, 0xF7, 0x03, 0x80, 0x00, 0xE3, 0x87, 0x00, 0x00, 0xE3, 0x8F, 0x00, 0x01, 0xC1, 0xCE, 0x00,
0x01, 0xC1, 0xFC, 0x00, 0x03, 0x80, 0xFC, 0x00, 0x03, 0x80, 0x78, 0x00, 0x07, 0x00, 0xF8, 0x00,
0x0E, 0x01, 0xFE, 0x00, 0x0C, 0x07, 0x8F, 0x00, 0x18, 0x1E, 0x07, 0xC0, 0x30, 0x78, 0x03, 0xFC,
0x61, 0xE0, 0x00, 0xF0, 0x4F, 0x00, 0x00, 0x30, 0x00, 0x00, 0x00, 0x00, 0x00, };
```

```
char code ye[]={
/*-- 文字: 液 --*/
/*-- 宋体 23; 此字体下对应的点阵为: 宽 x 高=31x31 --*/
/*-- 宽度不是 8 的倍数, 现调整为: 宽度 x 高度=32x31 --*/
0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x70, 0x00, 0x08, 0x00, 0x38, 0x00,
0x0E, 0x00, 0x3C, 0x30, 0x07, 0x80, 0x1C, 0x38, 0x07, 0xBF, 0xFF, 0xFC, 0x03, 0x82, 0x10, 0x04,
0x03, 0x87, 0x9C, 0x00, 0x00, 0x07, 0xBE, 0x00, 0x60, 0x67, 0x38, 0x60, 0x70, 0xCE, 0x38, 0xF0,
0x3C, 0xCE, 0x3F, 0xF0, 0x1E, 0xDC, 0x70, 0xE0, 0x1F, 0x9E, 0x7C, 0xE0, 0x0D, 0xBE, 0xEE, 0xE0,
0x03, 0xBC, 0xEF, 0xC0, 0x03, 0xFD, 0xE7, 0xC0, 0x03, 0xFD, 0xF1, 0xC0, 0x07, 0xDF, 0x33, 0x80,
0x07, 0x9C, 0x3B, 0x80, 0x6E, 0x1C, 0x1F, 0x80, 0x3E, 0x1C, 0x1F, 0x00, 0x0E, 0x1C, 0x0E, 0x00,
0x0E, 0x1C, 0x1F, 0x00, 0x0E, 0x1C, 0x3F, 0xC0, 0x1E, 0x1C, 0x7B, 0xE0, 0x1E, 0x1C, 0xF0, 0xFC,
0x1E, 0x1F, 0xC0, 0x7C, 0x00, 0x1F, 0x80, 0x30, 0x00, 0x00, 0x00, 0x00, };
```

```
char code xing[]={
/*-- 文字: 显 --*/
/*-- 宋体 23; 此字体下对应的点阵为: 宽 x 高=31x31 --*/
/*-- 宽度不是 8 的倍数, 现调整为: 宽度 x 高度=32x31 --*/
0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x03, 0x80, 0x03, 0x80,
0x03, 0xFF, 0xFF, 0xC0, 0x03, 0xC0, 0x03, 0x80, 0x01, 0xC0, 0x03, 0x80, 0x01, 0xC0, 0x03, 0x80,
0x01, 0xC0, 0x03, 0x80, 0x01, 0xFF, 0xFF, 0x80, 0x01, 0xC0, 0x03, 0x80, 0x01, 0xC0, 0x03, 0x80, };
```

```
0x03, 0xC0, 0x03, 0x80, 0x03, 0xFF, 0xFF, 0x80, 0x03, 0xC0, 0x03, 0x80, 0x03, 0x98, 0x62, 0x00,
0x00, 0x1E, 0x78, 0x00, 0x0C, 0x1C, 0x78, 0xE0, 0x0E, 0x1C, 0x70, 0xF0, 0x07, 0x1C, 0x71, 0xF0,
0x03, 0x9C, 0x71, 0xC0, 0x03, 0xDC, 0x73, 0x80, 0x01, 0xDC, 0x77, 0x00, 0x01, 0xFC, 0x7E, 0x00,
0x01, 0xDC, 0x7C, 0x00, 0x00, 0x1C, 0x78, 0x00, 0x00, 0x1C, 0x70, 0x70, 0x00, 0x1C, 0x70, 0xF8,
0x7F, 0xFF, 0xFF, 0x8C, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, };
```

```
char code mo[]={
/*-- 文字: 模 --*/
/*-- 宋体 23; 此字体下对应的点阵为: 宽 x 高=31x31 --*/
/*-- 宽度不是 8 的倍数, 现调整为: 宽度 x 高度=32x31 --*/
0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x04, 0x00, 0x07, 0x81, 0xE7, 0x00, 0x07, 0xC1, 0xE7, 0x80,
0x03, 0x81, 0xC7, 0x38, 0x03, 0x81, 0xC7, 0x7C, 0x03, 0xBF, 0xFF, 0xEC, 0x03, 0xB1, 0xC7, 0x00,
0x03, 0xF9, 0xC7, 0x00, 0x7F, 0xDF, 0x80, 0xC0, 0x07, 0x87, 0xFF, 0xE0, 0x07, 0x87, 0x00, 0xE0,
0x07, 0x87, 0x00, 0xE0, 0x0F, 0xC7, 0x00, 0xE0, 0x0F, 0xF7, 0xFF, 0xE0, 0x0F, 0xFF, 0x00, 0xE0,
0x1F, 0xFF, 0x00, 0xE0, 0x1F, 0xB7, 0xFF, 0xE0, 0x1B, 0x87, 0x38, 0xE0, 0x3B, 0x86, 0x38, 0x80,
0x73, 0x80, 0x78, 0x38, 0x63, 0x80, 0x78, 0x7C, 0x43, 0xFF, 0xFF, 0xEC, 0x03, 0x80, 0x7C, 0x00,
0x03, 0x80, 0xEE, 0x00, 0x03, 0x80, 0xE7, 0x00, 0x07, 0x81, 0xC3, 0xC0, 0x07, 0x87, 0x81, 0xF8,
0x07, 0x8E, 0x00, 0xFC, 0x07, 0xF8, 0x00, 0x30, 0x00, 0x00, 0x00, 0x00, 0x00, };
```

```
char code kuai[]={
/*-- 文字: 块 --*/
/*-- 宋体 23; 此字体下对应的点阵为: 宽 x 高=31x31 --*/
/*-- 宽度不是 8 的倍数, 现调整为: 宽度 x 高度=32x31 --*/
0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x06, 0x00, 0xF0, 0x00, 0x07, 0xC0, 0xF0, 0x00,
0x07, 0x80, 0xE0, 0x00, 0x07, 0x80, 0xE0, 0x00, 0x07, 0x80, 0xE0, 0x00, 0x07, 0x80, 0xE0, 0x00,
0x07, 0x80, 0xE1, 0xC0, 0x07, 0x8F, 0xFF, 0xE0, 0x07, 0xB8, 0xE1, 0xC0, 0x7F, 0xFC, 0xE1, 0xC0,
0x07, 0x8C, 0xE1, 0xC0, 0x07, 0x80, 0xE1, 0xC0, 0x07, 0x80, 0xE1, 0xC0, 0x07, 0x80, 0xE1, 0xC0,
0x07, 0x80, 0xE1, 0xF8, 0x07, 0xFF, 0xFF, 0xFC, 0x07, 0x80, 0xF8, 0x04, 0x07, 0x81, 0xF8, 0x00,
0x07, 0x81, 0xD8, 0x00, 0x07, 0xFD, 0xDC, 0x00, 0x07, 0xC3, 0xCE, 0x00, 0x7F, 0x03, 0x8E, 0x00,
0x78, 0x07, 0x07, 0x00, 0x30, 0x0F, 0x03, 0xC0, 0x00, 0x1C, 0x03, 0xE0, 0x00, 0x78, 0x01, 0xF8,
0x01, 0xE0, 0x00, 0xFC, 0x07, 0x80, 0x00, 0x30, 0x00, 0x00, 0x00, 0x00, 0x00, };
```

```
char code del[]={
/*-- 文字: 的 --*/
/*-- 宋体 23; 此字体下对应的点阵为: 宽 x 高=31x31 --*/
/*-- 宽度不是 8 的倍数, 现调整为: 宽度 x 高度=32x31 --*/
0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x01, 0xC0, 0x38, 0x00, 0x01, 0xE0, 0x3E, 0x00,
0x01, 0xC0, 0x3C, 0x00, 0x01, 0xC0, 0x38, 0x00, 0x03, 0x80, 0x78, 0x00, 0x1B, 0x9C, 0x70, 0x30,
0x1F, 0xFE, 0xFF, 0xF8, 0x1C, 0x1C, 0xE0, 0x78, 0x1C, 0x1C, 0xE0, 0x70, 0x1C, 0x1D, 0xC0, 0x70,
0x1C, 0x1F, 0x80, 0x70, 0x1C, 0x1F, 0x00, 0x70, 0x1C, 0x1E, 0xE0, 0x70, 0x1C, 0x1E, 0x70, 0x70,
0x1C, 0x1C, 0x78, 0x70, 0x1F, 0xFC, 0x38, 0x70, 0x1C, 0x1C, 0x3C, 0x70, 0x1C, 0x1C, 0x38, 0x70,
0x1C, 0x1C, 0x00, 0x70, 0x1C, 0x1C, 0x00, 0x70, 0x1C, 0x1C, 0x00, 0x70, 0x1C, 0x1C, 0x00, 0x70,
0x1C, 0x1C, 0x00, 0xF0, 0x1C, 0x1C, 0x00, 0xF0, 0x1F, 0xFC, 0x38, 0xE0, 0x1C, 0x1C, 0x0F, 0xE0,
0x1C, 0x18, 0x03, 0xC0, 0x18, 0x00, 0x03, 0x80, 0x00, 0x00, 0x00, 0x00, };
```

```
char code gao[]={
/*-- 文字: 高 --*/
/*-- 宋体 23; 此字体下对应的点阵为: 宽 x 高=31x31 --*/
/*-- 宽度不是 8 的倍数, 现调整为: 宽度 x 高度=32x31 --*/
0x00, 0x00, 0x00, 0x00, 0x00, 0x0C, 0x00, 0x00, 0x00, 0x0F, 0x00, 0x00, 0x00, 0x07, 0x80, 0x00,
0x00, 0x03, 0x80, 0x18, 0x00, 0x03, 0x00, 0x3C, 0x7F, 0xFF, 0xFF, 0xEC, 0x00, 0x00, 0x00, 0x00,
0x00, 0xC0, 0x0E, 0x00, 0x00, 0xFF, 0xFF, 0x00, 0x00, 0xE0, 0x0E, 0x00, 0x00, 0xE0, 0x0E, 0x00,
0x00, 0xE0, 0x0E, 0x00, 0x00, 0xFF, 0xFE, 0x00, 0x00, 0xE0, 0x0E, 0x00, 0x18, 0x00, 0x00, 0x60,
0x0F, 0xFF, 0xFF, 0xF0, 0x0E, 0x00, 0x00, 0xF8, 0x0E, 0x00, 0x18, 0xF0, 0x0E, 0x7F, 0xFC, 0xF0,
0x0E, 0x70, 0x3C, 0xF0, 0x0E, 0x70, 0x38, 0xF0, 0x0E, 0x70, 0x38, 0xF0, 0x0E, 0x70, 0x38, 0xF0,
0x0E, 0x7F, 0xF8, 0xF0, 0x0E, 0x70, 0x38, 0xF0, 0x0E, 0x60, 0x30, 0xF0, 0x0E, 0x00, 0x0F, 0xF0,
0x0E, 0x00, 0x01, 0xE0, 0x1C, 0x00, 0x00, 0xE0, 0x00, 0x00, 0x00, 0x00, 0x00, };
```

```
char code ke[]={
/*-- 文字: 科 --*/
```

```

/*-- 宋体 23; 此字体下对应的点阵为: 宽 x 高=31x31  --*/
/*-- 宽度不是 8 的倍数, 现调整为: 宽度 x 高度=32x31  --*/
0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x18, 0x03, 0xC0, 0x00, 0x7C, 0x03, 0xE0,
0x03, 0xFE, 0x03, 0xC0, 0x7F, 0xC0, 0x03, 0xC0, 0x01, 0xC0, 0xE3, 0xC0, 0x01, 0xC0, 0x73, 0xC0,
0x01, 0xC0, 0x7B, 0xC0, 0x01, 0xC0, 0x3B, 0xC0, 0x01, 0xCE, 0x33, 0xC0, 0x7F, 0xFF, 0x03, 0xC0,
0x01, 0xC3, 0x03, 0xC0, 0x01, 0xC1, 0xC3, 0xC0, 0x03, 0xC0, 0xE3, 0xC0, 0x03, 0xF0, 0xF3, 0xC0,
0x07, 0xFC, 0x73, 0xC0, 0x07, 0xDE, 0x73, 0xF8, 0x0F, 0xCE, 0x03, 0xFE, 0x0F, 0xC0, 0x07, 0xE0,
0x1D, 0xC0, 0xFF, 0xC0, 0x39, 0xCF, 0x83, 0xC0, 0x71, 0xC0, 0x03, 0xC0, 0x61, 0xC0, 0x03, 0xC0,
0x01, 0xC0, 0x03, 0xC0, 0x01, 0xC0, 0x03, 0xC0, 0x01, 0xC0, 0x03, 0xC0, 0x01, 0xE0, 0x03, 0xC0,
0x01, 0xE0, 0x03, 0xC0, 0x01, 0xC0, 0x03, 0xC0, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, };

char code ji1[]={
/*-- 文字: 技  --*/
/*-- 宋体 23; 此字体下对应的点阵为: 宽 x 高=31x31  --*/
/*-- 宽度不是 8 的倍数, 现调整为: 宽度 x 高度=32x31  --*/
0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x03, 0xC0, 0x1C, 0x00, 0x03, 0xC0, 0x1E, 0x00,
0x03, 0x80, 0x1C, 0x00, 0x03, 0x80, 0x1C, 0x00, 0x03, 0x80, 0x1C, 0x00, 0x03, 0x80, 0x1C, 0x30,
0x03, 0xB8, 0x1C, 0x78, 0x7F, 0xFF, 0xFF, 0xEC, 0x03, 0x80, 0x1C, 0x00, 0x03, 0x80, 0x1C, 0x00,
0x03, 0x80, 0x1C, 0x00, 0x03, 0x80, 0x1C, 0x40, 0x03, 0xBC, 0x1C, 0xE0, 0x03, 0xE7, 0xFF, 0xF0,
0x0F, 0x81, 0x81, 0xE0, 0x7F, 0x81, 0xC1, 0xC0, 0x7B, 0x80, 0xC3, 0xC0, 0x33, 0x80, 0xE3, 0x80,
0x03, 0x80, 0x67, 0x80, 0x03, 0x80, 0x77, 0x00, 0x03, 0x80, 0x3F, 0x00, 0x03, 0x80, 0x3E, 0x00,
0x03, 0x80, 0x3C, 0x00, 0x03, 0x80, 0x7F, 0x00, 0x03, 0x81, 0xE7, 0xC0, 0x3F, 0x83, 0xC3, 0xF8,
0x0F, 0x8E, 0x00, 0xFC, 0x07, 0x78, 0x00, 0x30, 0x00, 0x00, 0x00, 0x00, 0x00, };

char code j[]={
/*-- 文字: 。  --*/
/*-- 宋体 23; 此字体下对应的点阵为: 宽 x 高=31x31  --*/
/*-- 宽度不是 8 的倍数, 现调整为: 宽度 x 高度=32x31  --*/
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, 0x07, 0xE0, 0x00, 0x00, 0x0E, 0x60, 0x00, 0x00, 0x0C, 0x70, 0x00, 0x00,
0x0C, 0x70, 0x00, 0x00, 0x0E, 0x60, 0x00, 0x00, 0x07, 0xE0, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00,
0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, };

char code dian5[]={
/*-- 文字: 电  --*/
/*-- 宋体 12; 此字体下对应的点阵为: 宽 x 高=16x16  --*/
0x01, 0x00, 0x01, 0x00, 0x01, 0x00, 0x3F, 0xF8, 0x21, 0x08, 0x21, 0x08, 0x3F, 0xF8, 0x21, 0x08,
0x21, 0x08, 0x21, 0x08, 0x3F, 0xF8, 0x21, 0x08, 0x01, 0x02, 0x01, 0x02, 0x00, 0xFE, 0x00, 0x00, };

char code hua[]={
/*-- 文字: 话  --*/
/*-- 宋体 12; 此字体下对应的点阵为: 宽 x 高=16x16  --*/
0x40, 0x00, 0x20, 0x1C, 0x33, 0xE0, 0x20, 0x20, 0x00, 0x20, 0x07, 0xFE, 0xF0, 0x20, 0x10, 0x20,
0x10, 0x20, 0x11, 0xFC, 0x11, 0x04, 0x11, 0x04, 0x15, 0x04, 0x19, 0xFC, 0x11, 0x04, 0x00, 0x00, };

char code m[]={
/*-- 文字: :  --*/
/*-- 宋体 12; 此字体下对应的点阵为: 宽 x 高=16x16  --*/
0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00,
0x00, 0x00, 0x30, 0x00, 0x30, 0x00, 0x00, 0x00, 0x00, 0x30, 0x00, 0x30, 0x00, 0x00, 0x00, 0x00, 0x00, };

char code ling[]={
/*-- 文字: 0  --*/
/*-- 宋体 12; 此字体下对应的点阵为: 宽 x 高=16x16  --*/
0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x18, 0x00, 0x24, 0x00, 0x42, 0x00, 0x42, 0x00, 0x42, 0x00,
0x42, 0x00, 0x42, 0x00, 0x42, 0x00, 0x42, 0x00, 0x24, 0x00, 0x18, 0x00, 0x00, 0x00, 0x00, 0x00, };

```

```
char code qi[]={
/*-- 文字: 7 --*/
/*-- 宋体 12; 此字体下对应的点阵为: 宽 x 高=16x16 --*/
0x00,0x00,0x00,0x00,0x00,0x00,0x7E,0x00,0x44,0x00,0x44,0x00,0x08,0x00,0x08,0x00,
0x10,0x00,0x10,0x00,0x10,0x00,0x10,0x00,0x10,0x00,0x10,0x00,0x00,0x00,0x00,0x00,};

char code wu[]={
/*-- 文字: 5 --*/
/*-- 宋体 12; 此字体下对应的点阵为: 宽 x 高=16x16 --*/
0x00,0x00,0x00,0x00,0x00,0x00,0x7E,0x00,0x40,0x00,0x40,0x00,0x40,0x00,0x58,0x00,
0x64,0x00,0x02,0x00,0x02,0x00,0x42,0x00,0x44,0x00,0x38,0x00,0x00,0x00,0x00,0x00,};

char code g[]={
/*-- 文字: - --*/
/*-- 宋体 12; 此字体下对应的点阵为: 宽 x 高=16x16 --*/
0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,
0x7F,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,};

char code er[]={
/*-- 文字: 2 --*/
/*-- 宋体 12; 此字体下对应的点阵为: 宽 x 高=16x16 --*/
0x00,0x00,0x00,0x00,0x00,0x00,0x3C,0x00,0x42,0x00,0x42,0x00,0x42,0x00,0x04,0x00,
0x04,0x00,0x08,0x00,0x10,0x00,0x20,0x00,0x42,0x00,0x7E,0x00,0x00,0x00,0x00,0x00,};

char code jiu[]={
/*-- 文字: 9 --*/
/*-- 宋体 12; 此字体下对应的点阵为: 宽 x 高=16x16 --*/
0x00,0x00,0x00,0x00,0x00,0x00,0x18,0x00,0x24,0x00,0x42,0x00,0x42,0x00,0x42,0x00,
0x26,0x00,0x1A,0x00,0x02,0x00,0x02,0x00,0x24,0x00,0x38,0x00,0x00,0x00,0x00,0x00,};

char code ba[]={
/*-- 文字: 8 --*/
/*-- 宋体 12; 此字体下对应的点阵为: 宽 x 高=16x16 --*/
0x00,0x00,0x00,0x00,0x00,0x00,0x3C,0x00,0x42,0x00,0x42,0x00,0x42,0x00,0x24,0x00,
0x18,0x00,0x24,0x00,0x42,0x00,0x42,0x00,0x42,0x00,0x3C,0x00,0x00,0x00,0x00,0x00,};

char code si5[]={
/*-- 文字: 4 --*/
/*-- 宋体 12; 此字体下对应的点阵为: 宽 x 高=16x16 --*/
0x00,0x00,0x00,0x00,0x00,0x00,0x04,0x00,0x0C,0x00,0x14,0x00,0x24,0x00,0x24,0x00,
0x44,0x00,0x44,0x00,0x7E,0x00,0x04,0x00,0x04,0x00,0x1E,0x00,0x00,0x00,0x00,0x00,};

char code liu[]={
/*-- 文字: 6 --*/
/*-- 宋体 12; 此字体下对应的点阵为: 宽 x 高=16x16 --*/
0x00,0x00,0x00,0x00,0x00,0x00,0x1C,0x00,0x24,0x00,0x40,0x00,0x40,0x00,0x58,0x00,
0x64,0x00,0x42,0x00,0x42,0x00,0x42,0x00,0x24,0x00,0x18,0x00,0x00,0x00,0x00,0x00,};

char code yi5[]={
/*-- 文字: 1 --*/
/*-- 宋体 12; 此字体下对应的点阵为: 宽 x 高=16x16 --*/
0x00,0x00,0x00,0x00,0x00,0x00,0x10,0x00,0x70,0x00,0x10,0x00,0x10,0x00,0x10,0x00,
0x10,0x00,0x10,0x00,0x10,0x00,0x10,0x00,0x10,0x00,0x7C,0x00,0x00,0x00,0x00,0x00,};
```

```
//主程序
```

```
void main(void)
```

```
{
LCD_initial();
LEDA=0;
while(1)
{
    display_32x32(32*1, 0, huan);
    Switch();
    display_32x32(32*2, 0, ying);
    Switch();
    display_32x32(32*3, 0, guang);
    Switch();
    display_32x32(32*4, 0, lin);
    Switch();
    display_32x32(32*5, 0, f);
    Switch();
    display_32x32(32*6, 0, jing);
    Switch();
    display_32x32(32*7, 0, lian);
    Switch();
    display_32x32(32*8, 0, xun);
    Switch();

    display_32x32_blue(32*0, 32*1, shen);
    Switch();
    display_32x32_blue(32*1, 32*1, zhen);
    Switch();
    display_32x32_blue(32*2, 32*1, shi);
    Switch();
    display_32x32_blue(32*3, 32*1, jing);
    Switch();
    display_32x32_blue(32*4, 32*1, lian);
    Switch();
    display_32x32_blue(32*5, 32*1, xun);
    Switch();
    display_32x32_blue(32*6, 32*1, dian);
    Switch();
    display_32x32_blue(32*7, 32*1, zi);
    Switch();
    display_32x32_blue(32*8, 32*1, you);
    Switch();
    display_32x32_blue(32*9, 32*1, xian);
    Switch();
    display_32x32_blue(32*0, 32*2, gong);
    Switch();
    display_32x32_blue(32*1, 32*2, si);
    Switch();
    display_32x32_blue(32*2, 32*2, shi1);
    Switch();
    display_32x32_blue(32*3, 32*2, ji);
    Switch();
    display_32x32_blue(32*4, 32*2, yan);
    Switch();
    display_32x32_blue(32*5, 32*2, fa);
    Switch();
    display_32x32_blue(32*6, 32*2, d);
    Switch();
    display_32x32_blue(32*7, 32*2, shen2);
    Switch();
    display_32x32_blue(32*8, 32*2, chan);
    Switch();
}
```

```
display_32x32_blue(32*9, 32*2, d);
Switch();
display_32x32_blue(32*0, 32*3, xiao);
Switch();
display_32x32_blue(32*1, 32*3, shou);
Switch();
display_32x32_blue(32*2, 32*3, yu);
Switch();
display_32x32_blue(32*3, 32*3, yi);
Switch();
display_32x32_blue(32*4, 32*3, ti);
Switch();
display_32x32_blue(32*5, 32*3, de);
Switch();
display_32x32_blue(32*6, 32*3, cong);
Switch();
display_32x32_blue(32*7, 32*3, shi2);
Switch();
display_32x32_blue(32*8, 32*3, yie);
Switch();
display_32x32_blue(32*9, 32*3, jing);
Switch();
display_32x32_blue(32*0, 32*4, xing);
Switch();
display_32x32_blue(32*1, 32*4, shi3);
Switch();
display_32x32_blue(32*2, 32*4, ping);
Switch();
display_32x32_blue(32*3, 32*4, ji2);
Switch();
display_32x32_blue(32*4, 32*4, yie);
Switch();
display_32x32_blue(32*5, 32*4, jing);
Switch();
display_32x32_blue(32*6, 32*4, mo);
Switch();
display_32x32_blue(32*7, 32*4, kuai);
Switch();
display_32x32_blue(32*8, 32*4, de);
Switch();
display_32x32_blue(32*9, 32*4, gao);
Switch();
display_32x32_blue(32*0, 32*5, ke);
Switch();
display_32x32_blue(32*1, 32*5, ji1);
Switch();
display_32x32_blue(32*2, 32*5, gong);
Switch();
display_32x32_blue(32*3, 32*5, si);
Switch();
display_32x32_blue(32*4, 32*5, j);
Switch();
display_16x16(16*0, 16*13, dian5);
Switch();
display_16x16(16*1, 16*13, hua);
Switch();
display_16x16(16*2, 16*13, m);
Switch();
display_16x16(16*3, 16*13, ling);
Switch();
```

```

display_16x16(16*4, 16*13, qi);
Switch();
display_16x16(16*5, 16*13, wu);
Switch();
display_16x16(16*6, 16*13, wu);
Switch();
display_16x16(16*7, 16*13, g);
Switch();
display_16x16(16*8, 16*13, er);
Switch();
display_16x16(16*9, 16*13, jiu);
Switch();
display_16x16(16*10, 16*13, qi);
Switch();
display_16x16(16*11, 16*13, ba);
Switch();
display_16x16(16*12, 16*13, si5);
Switch();
display_16x16(16*13, 16*13, jiu);
Switch();
display_16x16(16*14, 16*13, liu);
Switch();
display_16x16(16*15, 16*13, si5);
Switch();
}
}

```

