GT22L16A1Y
Standard Dot Matrix Font Chip

DATASHEET

- **BIG5 Traditional Chinese (5401 Chinese)：15x16**
- **GB2312 Simplified Chinese (6763 Chinese)：15x16**
- **JIS0208 Japanese (8042 Characters)：15x16**
- **KCS5605 Korean (6500 Characters)：15x16**
- **Unicode Traditional Chinese (5401 Chinese)：15x16**
- **Unicode Simplified Chinese (6763 Chinese)：15x16**
- **Unicode Japanese (8042 Characters)：15x16**
- **Unicode Korean (6500 Characters)：15x16**
- **Unicode Multi-Language (173 coutries)：12, 16**

  (Latin, Cyrillic, Greek, Arabic, etc)
- **ASCII (7 sets): 5x7~ 16**
- **Data Arrangement: Vertical byte, horizontal string**
- **Bus Interface: SPI**
- **Package: SOP-16**

VER 2.0

2011-4

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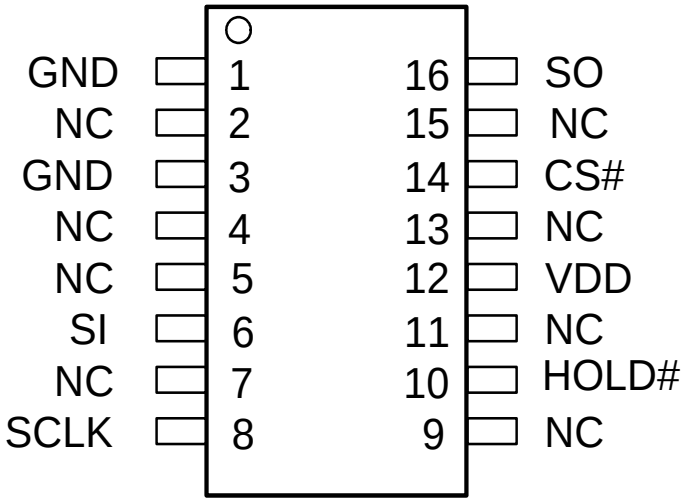
1 General

GT22L16A1Y mainly contains 15X16 dot matrix font size, supporting character set including GB2312 /Unicode simplify Chinese, BIG5/Unicode traditional Chinese, JIS0208/Unicode Japanese, KCS 5605 Korean and 173 coutries characters in Unicode. Also support Chinese PINYIN input method,contains PINYIN codelist. The data arrangement format is vertical byte, horizontal string. The user may obtain the address of certain character dot matrix with the calculation method given by this datasheet, which enables the user to access to more character data by continually reading from the address already obtained.

1.1 Chip Feature

- Bus Interface: SPI
- Data Arrangement:：horizontal byte, horizontal string
- Frequency: 30MHz(max.) @3.3V
- Operating Voltage: 2.2V~3.6V
- Current:
- Operating:：20mA
- Standby： 30uA
- Package： SOP16
- Package Size： 10.0mm x 4.4mm (394milX173mil)
- Operating Temperature: -20℃~70℃

1.2 Chip Package



1.3 Pin Description

SOP16	Name	I/O	Description
1	GND		Ground
2	NC		Empty pin
3	GND		Ground
4	NC		Empty pin
5	NC		Empty pin
6	SI	I	Serial data input
7	NC		Empty pin
8	SCLK	I	Serial clock input
9	NC		Empty pin
10	HOLD#	I	Hold, to pause the device without
11	NC		Empty pin
12	VCC		+ 3.3V Power Supply
13	NC		Empty
14	CS#	I	Chip enable input
15	NC		Empty
16	SO	O	Serial data output

Serial Data Output (SO): Data shift-out on the falling edge of the serial clock.

Serial Data Input (SI): Data shift-in on the rising edge of the serial clock.

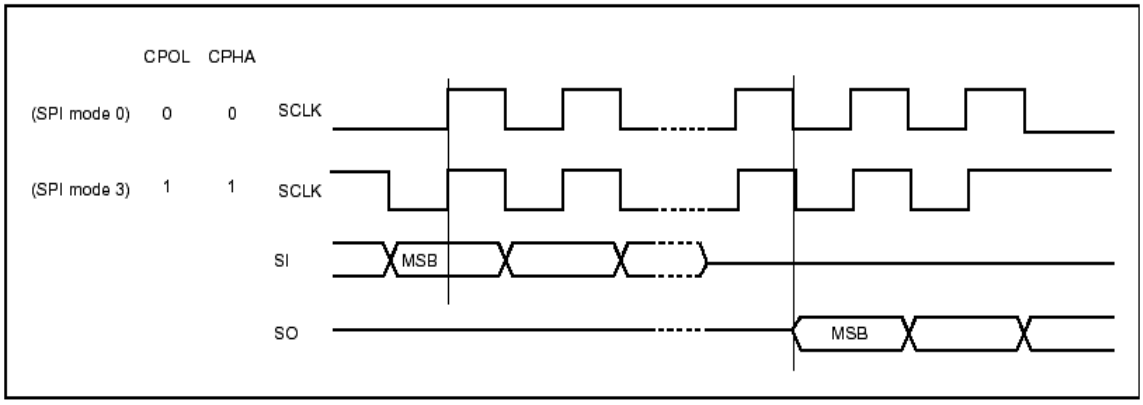
Serial Clock Input (SCLK): Data shift-out on the falling edge of the serial clock, shift-in on the rising

edge of the serial clock.

Chip Enable Input (CS#): The device is enabled by a high to low transition on CE#. CE# must remain low for the duration of any command sequence

HOLD#: To temporarily stop serial communication with SPI memory without resetting the device.

The HOLD# mode begins when the SCK active low state coincides with the falling edge of the HOLD# signal. The HOLD mode ends when the HOLD# signal's rising edge coincides with the SCK active low state.



1.4 Font Content

Character Set \ Font Size / Number of Characters			5X7	7X8	8X16	8X16 Bold	15x16	Proportional Adjusted 16 Arial	Proportional Adjusted 16 Time
ASC II			96	96	96	96		96	96
UNICODE	Latin (130 countries)	Basic			96			96	
		Supplemen			96			96	
		Extended A			128			128	
		Extended B			80			80	
		Extended Additional			96			96	
	Greek (2 countries)	Basic			96			96	
	Cyrillic (15 countries)	Basi			208			208	
	Arabic (24 countries)	Basic						256	
		Form A						176	
		Form B						144	
	Hebrew (1 country)	Basic			112				
	Thai (1 country)	Basic			128				
	GB2312						7609		
	BIG5						2073		
	JIS0208						8042		
	KSC5601						6500		
Conversion Table	UNICODE-> BIG5		Support						
	UNICODE-> GB2312		Support						
	UNICODE-> JIS0208		Support						
	BIG5		Support						
	UNICODE->KSC5601		Support						
	GBK->BIG5		Support						
Input Method	PINYIN Input Method		GB2312						

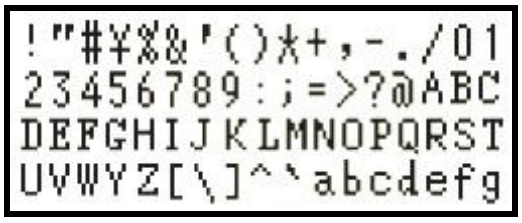
1.5 Font Sample

1） ASCII

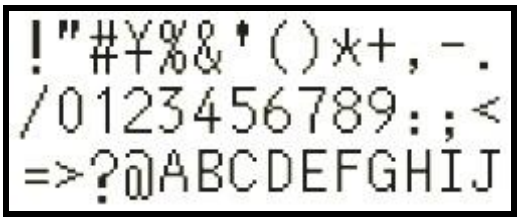
5x7 ASCII

7x8 ASCII

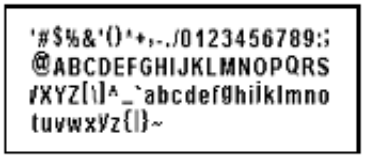
6X12 ASCII



8X16 ASCII



12 ASCII Arial



16 ASCII Arial

24 ASCII Arial

2） LCM Font（5x7）

LCM-0

LCM-1

LCM-2

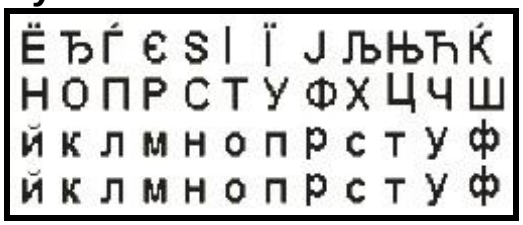
LCM-3

3） Unicode Font

Latin

Greek

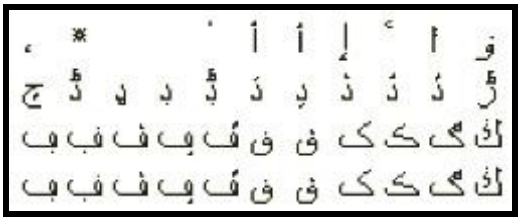
Cyrillic



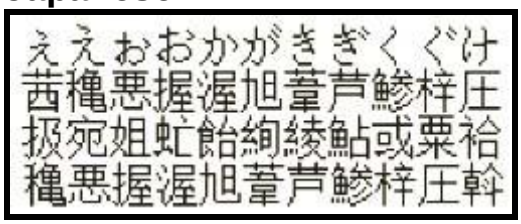
Hebrew

Thai

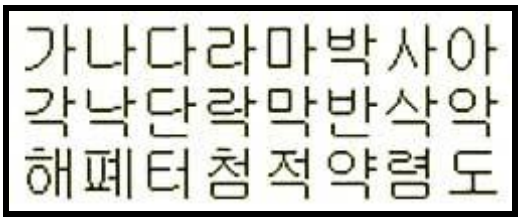
Arabic



Japanese



Korean



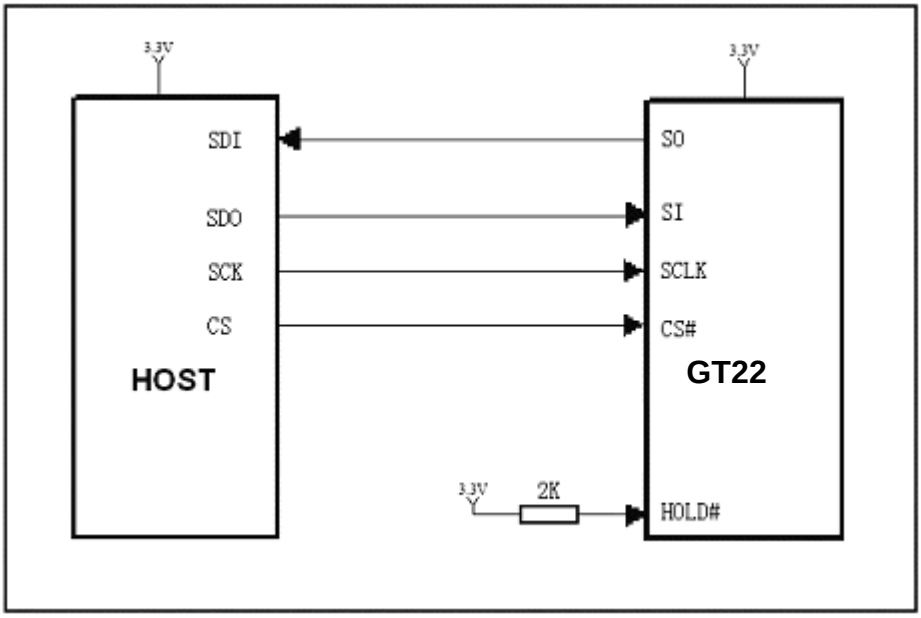
4） ISO8859 (8X16)

ISO-8859-1

ISO-8859-2

ISO-8859-3

1.6 **SPI Connection Block Diagram**



2 Operating Instruction

2.1 Instruction Parameter

Instruction Set

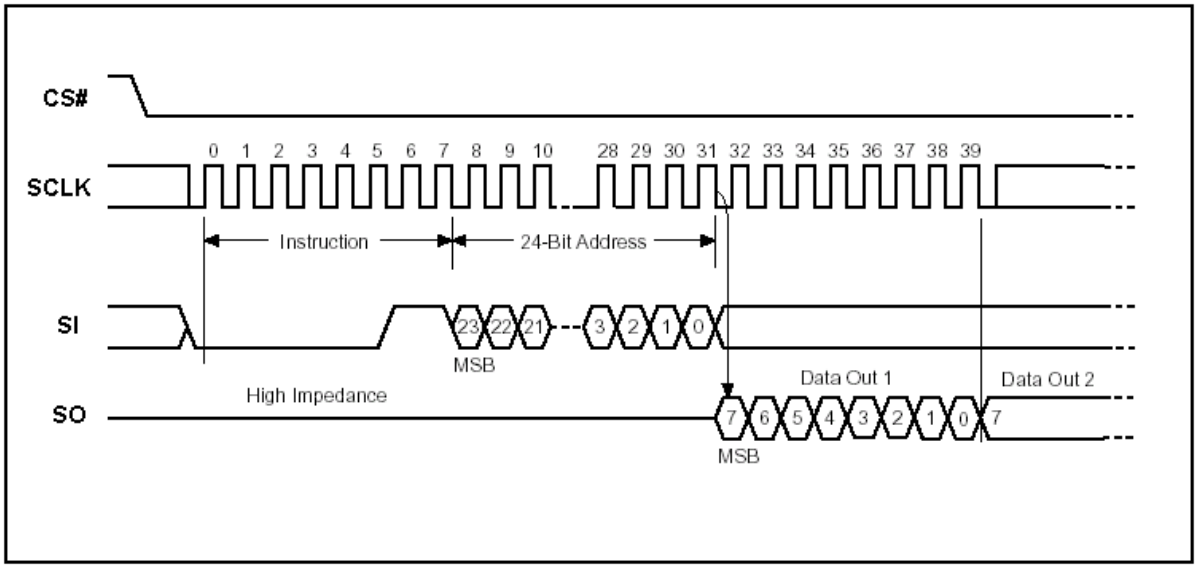
Instruction	Description	Instruction Code(One-Byte)		Address Bytes	Dummy Bytes	Data Bytes
READ	Read Data Bytes	0000 0011	03 h	3	—	1 to ∞
FAST_READ	Read Data Bytes at Higher Speed	0000 1011	0B h	3	1	1 to ∞

2.2 Read Data Bytes

The Read instruction supports up to 20 MHz, It outputs the data starting from the specified address location. The data output stream is continuous through all addresses until terminated by a low to high transition on CE#. The internal address pointer will automatically increment.

The Read instruction is initiated by executing an 8-bit command,03H, followed by address bits [A23-A0]. CE# must remain active low for the duration of the Read cycle.

Figure：Read Data Bytes (READ) Instruction Sequence and Data-out sequence:



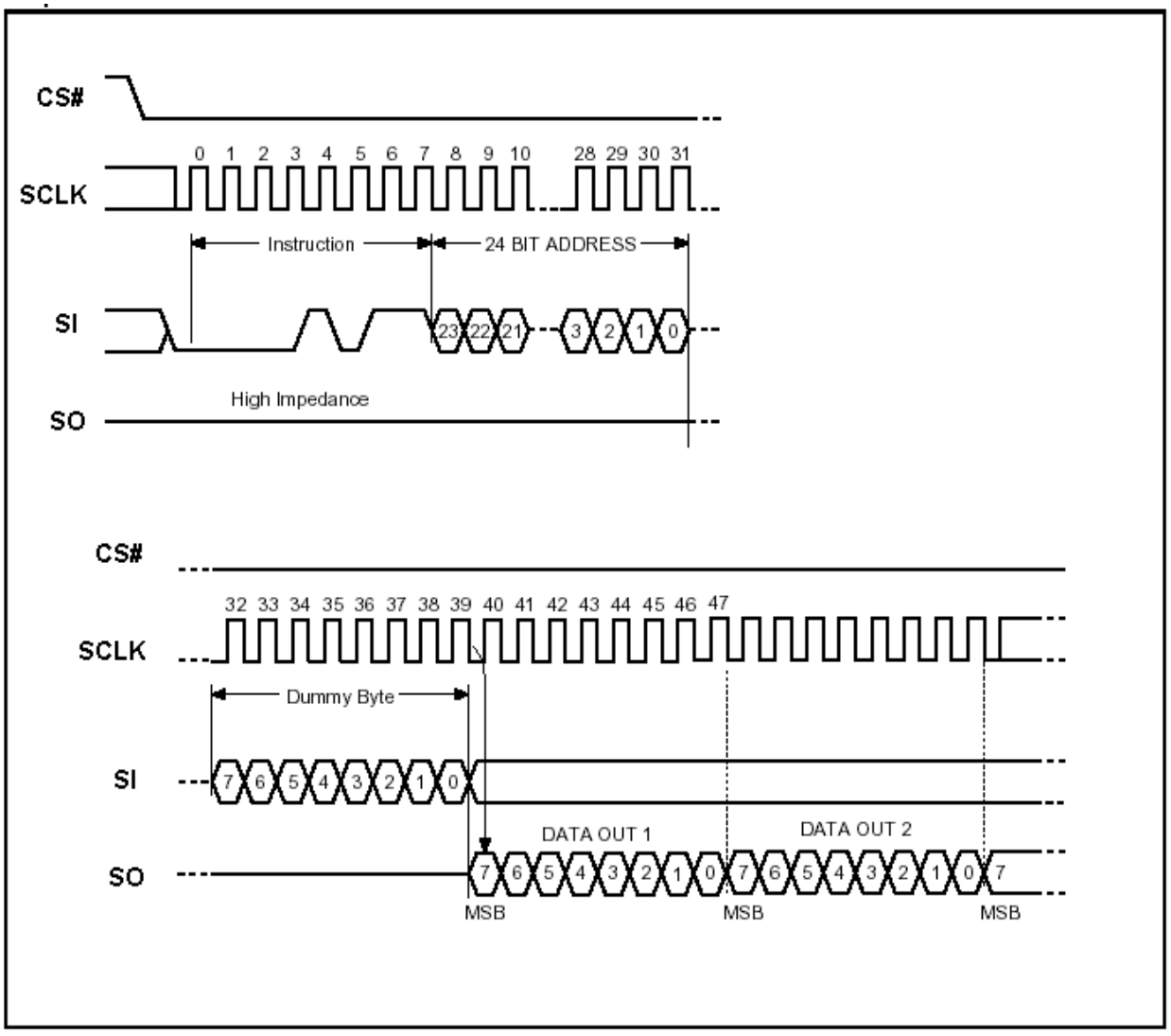
2.3 Read Data Bytes at Higher Speed

The High-Speed-Read instruction supporting up to 30 MHz is initiated by executing an 8-bit command, 0BH, followed by address bits [A23-A0] and a dummy byte. CE# must remain active low

for the duration of the High-Speed-Read cycle.

Following a dummy byte (8 clocks input dummy cycle), the High-Speed-Read instruction outputs the data starting from the specified address location. The data output stream is continuous through all addresses until terminated by a low to high transition on CE#. The internal address pointer will automatically increment.

Read Data Bytes at Higher Speed (READ_FAST) Instruction Sequence and Data-out sequence:



3 Electrical Characteristic

3.1 Absolute Maximum Rating

Symbol	Parameter	Min.	Max.	Unit	Condition
T_{OP}	Operating Temperature	-20	70	℃	
T_{STG}	Storage Temperature	-65	150	℃	
VCC	Supply Voltage	-0.3	3.6	V	
V_{IN}	Input Voltage	-0.3	VCC+0.3	V	
GND	Power Ground	-0.3	0.3	V	

3.2 DC Characteristic

Condition：T_{OP} =-20℃ to 70℃，GND=0V

Symbol	Parameter	Min.	Max.	Unit	Condition
I_{DD}	VCC Supply Current(active)		8	mA	
I_{SB}	VCC Standby Current		8	uA	
V_{IL}	Input LOW Voltage	-0.3	0.3VCC	V	VCC=2.2~3.6V
V_{IH}	Input HIGH Voltage	0.7VCC	VCC+0.4	V	
V_{OL}	Output LOW Voltage		0.4 (I_{OL}=1.6mA)	V	
V_{OH}	Output HIGH Voltage	0.8VCC (I_{OH}=-100uA)		V	
I_{LI}	Input Leakage Current	0	2	uA	
I_{LO}	Output Leakage Current	0	2	uA	

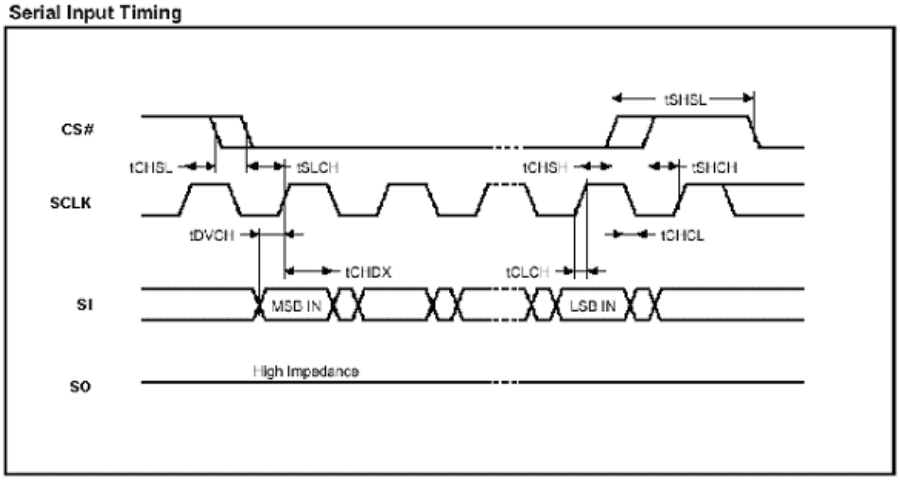
Note：I_{IL}：Input LOW Current，I_{IH}：Input HIGH Current，

I_{OL}：Output LOW Current，I_{OH}：Output HIGH Current，

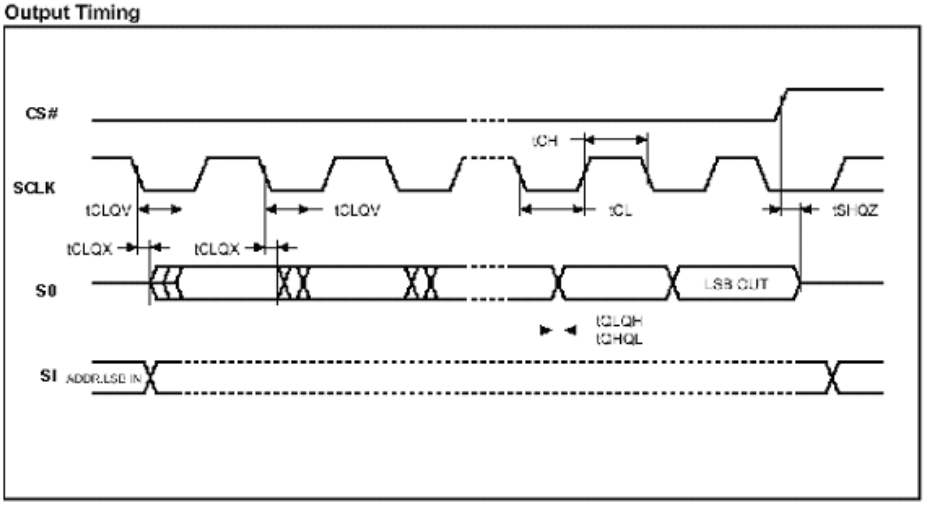
3.3 AC Characteristic

Symbol	Alt.	Parameter	Min.	Max.	Unit
Fc	Fc	Clock Frequency	D.C.	30	MHz
t_{CH}	t_{CLH}	Clock High Time	15		ns
t_{CL}	t_{CLL}	Clock Low Time	15		ns
t_{CLCH}		Clock Rise Time(peak to peak)	0.1		V/ns
t_{CHCL}		Clock Fall Time (peak to peak)	0.1		V/ns
t_{SLCH}	t_{CSS}	CS# Active Setup Time (relative to SCLK)	5		ns
t_{CHSL}		CS# Not Active Hold Time (relative to SCLK)	5		ns
t_{DVCH}	t_{DSU}	Data In Setup Time	2		ns
t_{CHDX}	t_{DH}	Data In Hold Time	5		ns
t_{CHSH}		CS# Active Hold Time (relative to SCLK)	5		ns
t_{SHCH}		CS# Not Active Setup Time (relative to SCLK)	5		ns
t_{SHSL}	t_{CSH}	CS# Deselect Time	100		ns
t_{SHQZ}	t_{DIS}	Output Disable Time		9	ns
t_{CLQV}	t_V	Clock Low to Output Valid		9	ns
t_{CLQX}	t_{HO}	Output Hold Time	0		ns

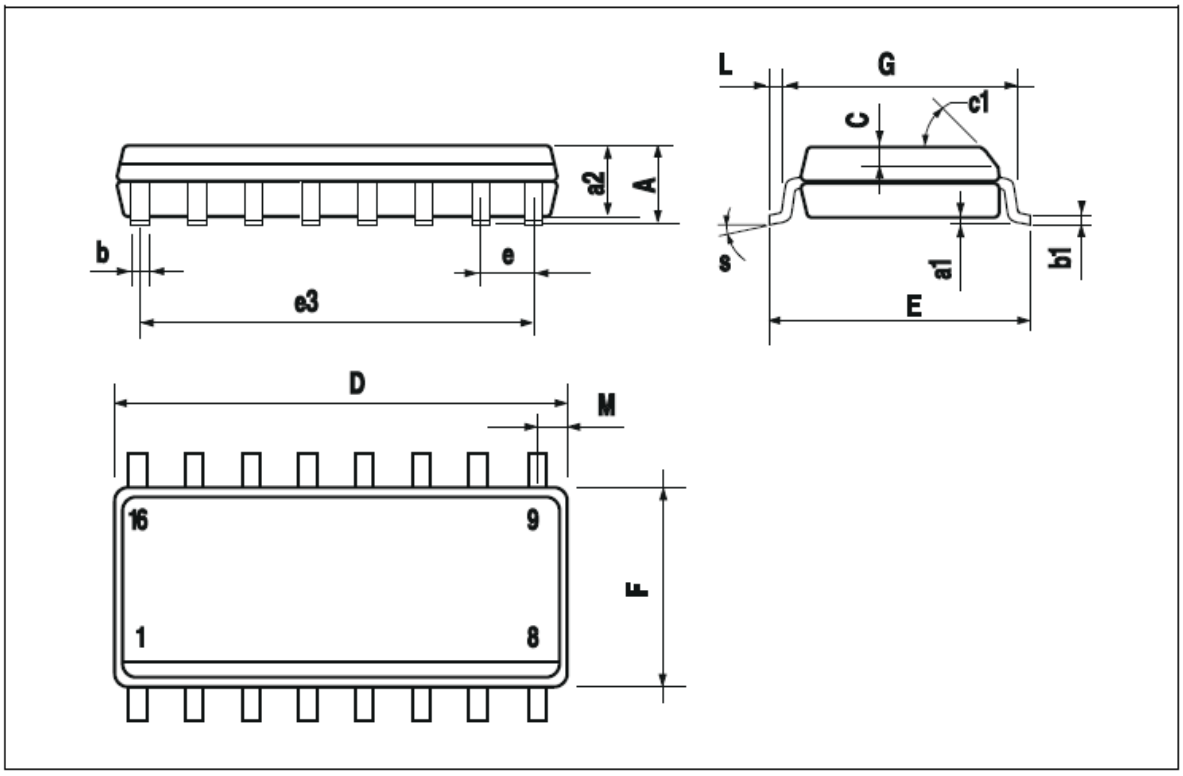
Serial Input Timing



Output Timing



4 Package Size



Dim.	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A			1.75			0.069
a1	0.1		0.2	0.004		0.008
a2			1.6			0.063
b	0.35		0.46	0.014		0.018
b1	0.19		0.25	0.007		0.010
C		0.5			0.020	
c1	45° (typ.)					
D	9.8		10	0.386		0.394
E	5.8		6.2	0.228		0.244
e		1.27			0.050	
e3		8.89			0.350	
F	3.8		4.0	0.150		0.157
G	4.6		5.3	0.181		0.209
L	0.5		1.27	0.020		0.050
M			0.62			0.024
S	8° (max.)					

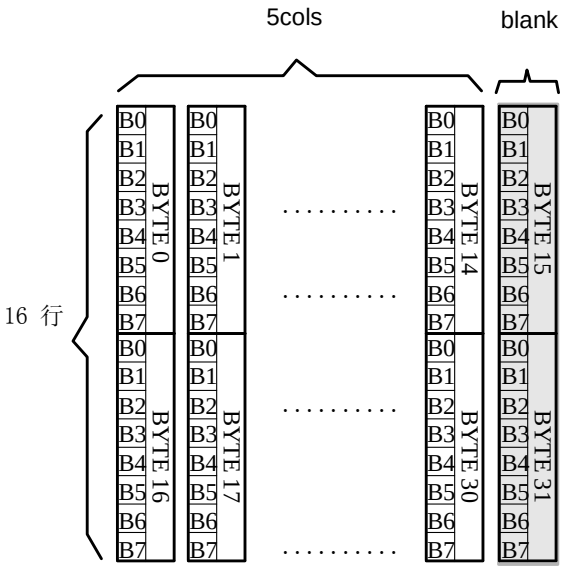
5 Font Read Method

5.1 Character Dot Matrix Arrangement(Data Arrangement Format)

Each character is stored in the Chinese dot matrix format, each dot is expressed by a binary bit. 1 represents for lightened dot, 0 represents for unlightened dot. The data arrangement format is byte vertical, string horizontal. The biggest bit of BYTE represents the most left point, the smallest bit of BYTE represents the most right point. Advances when horizontal row is booked. Chinese will display when using the above method.

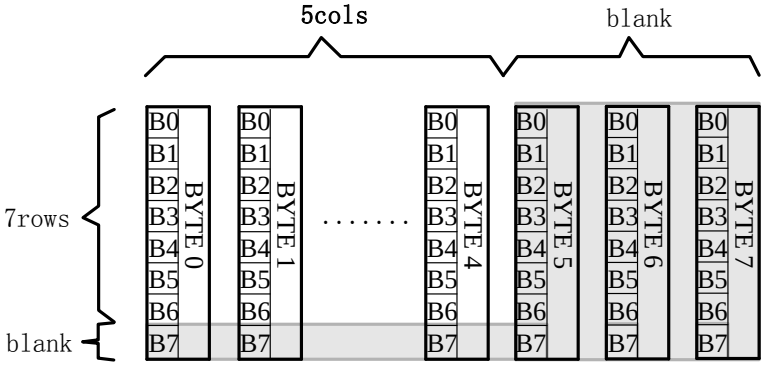
5.1.1 15X16

15X16 dots ASCII font requires 32 bytes（BYTE 0 – BYTE 31）to display.Data arrangement format of this ASCII font is byte horizontal, string horizontal, the detailed arrangement structure is showed below:



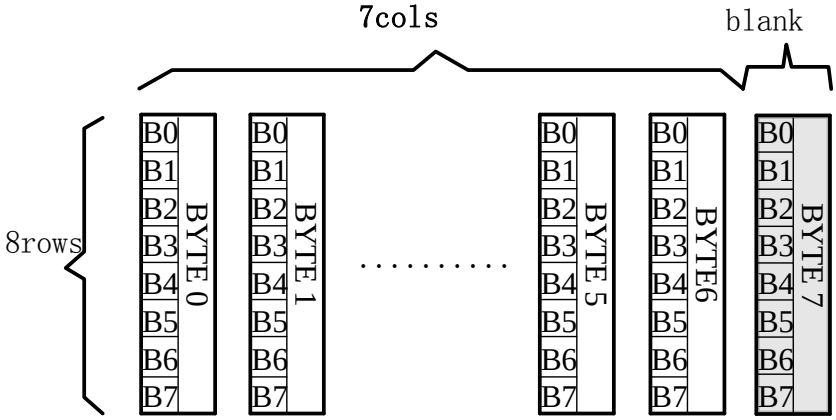
5.2 5x7

5X7 dots ASCII font requires 8 bytes(BYTE 0 – BYTE7) to display. Data arrangement format of this ASCII font is byte vertical, string horizontal, the detailed arrangement structure is showed below:



5.2.1 7X8

7X8 dots ASCII font requires 8 bytes (BYTE 0 – BYTE7) to display. Data arrangement format of this ASCII font is byte vertical, string horizontal, the detailed arrangement structure is showed below:



5.3 8X16

The following font share the same format:

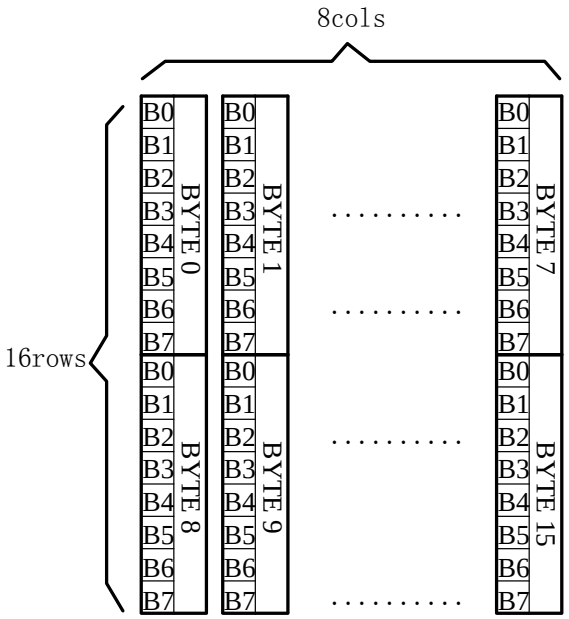
8X16 ASCII

8X16 Bold ASCII

8X16 Latin, Greek, Cyrillic, Hebrew

8X16 ISO 8859

8X16 dots font requires 16 bytes（BYTE 0 – BYTE15）to display. Data arrangement format of this font is byte vertical, string horizontal, the detailed arrangement structure is showed below:



5.4 16 Dot Matrix Proportional Adjusted Font

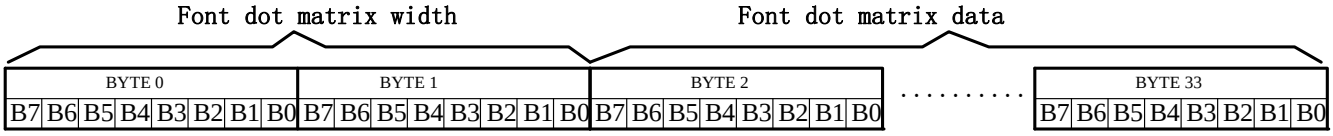
The following font has the same format:

16 dot matrix proportional adjusted ASCII Arial
16 dot matrix proportional adjusted ASCII Times New Roman
16 dot matrix proportional adjusted Unicode (Latin, Greek, Cyrillic）
16 dot matrix proportional adjusted Arabic

■ Storage Format

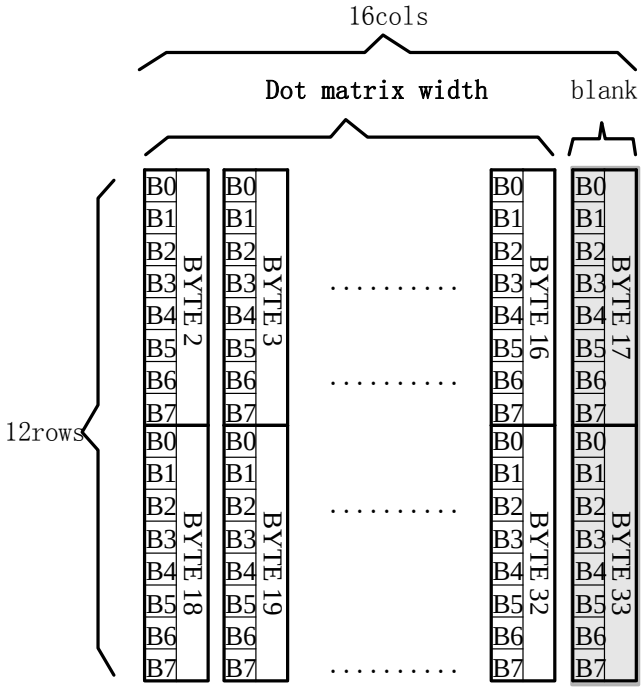
16 dots proportionally adjusted font requires 34 bytes（BYTE 0 – BYTE33）to display.

For the font is proportionally adjusted, BYTE0~ BYTE1 are stored font width data, BYTE2-33 are stored dots matrix data.



■ Storage Structure

The dots matrix storage width of proportionally adjusted font uses BYTE as its unit. Different font width will reveal corresponding blanks. With the font's actual width data stored in BYTE0~BYTE 1, it can be used as reference for the position of the next word.



For Example: ASCII Arial Font "B"

0-33 BYTE: 00 0C 00 00 00 00 00 00 7F 80 7F C0 60 C0 60 C0 60 C0 7F 80 7F C0 60 E0 60 60 60 60 7F C0 7F 80 00 00

In BYTE0~BYTE1: "00 0C" is width data, 12 bit width, 4 blank bits is reserved. The typeset of the next word may shift forward considering the

blank bits.

In BYTE2~BYTE33: “00 00 00 00 00 00 7F 80 7F C0 60 C0 60 C0 60 C0 7F 80 7F C0 60 E0 60 60 60 60 7F C0 7F 80 00 00” is dot matrix data.

5.5 Dot Matrix Font Address Table

No.	Type	Font Content	Character Set	Number of Characters	Capacity	Base Address
1	ASCII	5X7 ASCII	ASCII	96	768	0
2		7X8 ASCII	ASCII	96	768	768
3		8X16 Bold ASCII	ASCII	96	1,536	1536
4		16 dot proportional adjusted Arial ASCII	ASCII	96	3,264	3072
5	ASCII	8X16 Latin character	Basic	96	1,536	6336
6		8X16 Latin character	Supplement	96	1,536	7872
7		8X16 Latin character	Extended A	128	2,048	9408
8		8X16 Latin character	Extended B	80	1,280	11456
9		8X16 Latin character	Extended Additional	96	1,536	12736
10		8X16 Greek character	Basic	96		14272
11	UNICODE	8X16 Cyrillic character	Basic	208	3,328	15808
12		8X16 Hebrew character	Basic	112	1,792	19136
13		8X16 Thai character	Basic	128	2,048	20928
14		16 dot proportional adjusted Latin character	Basic	96	3,264	22976
15		16 dot proportional adjusted Latin character	Supplement	96	3,264	26240
16		16 dot proportional adjusted Latin character	Extended A	128	4,352	29504
17		16 dot proportional adjusted Latin character	Extended B	80	2,720	33856
18		16 dot proportional adjusted Latin character	Extended Additional	96	3,264	36576
19		16 dot proportional adjusted Greek character	Basic	96	3,264	39840
20		16 dot proportional adjusted Cyrillic character	Basic	208	7,072	43104
21		16 dot proportional adjusted Arabic characters	Basic	576	19,584	50176
22	CJK	GB2312		7614	243,648	69760
23		BIG5		2073	66,336	313408
24		KSC5601		6500	87,936	75200
26		JIS0208		7999		163136

					255,968	
27	Conversion Table	UNICODE->KOREA			85,872	419104
28		UNICODE->GB2312			49,312	504976
29		UNICODE->BIG5				
30		UNICODE->JIS			52,672	554288
		BIG5 TABLE			10,802	606960
		GBK->BIG5			39,598	617762
31	LCM	5X7 ISO8859		1792	14,336	657360
32		LCM 5*10 (x7)			17,920	671696
33		GT-KEYIN PY			17,880	689616
		UNICODE 5X7 (ISO8859)		509	4,072	707496

5.6 Calculation of Character Address

With certain calculation method, the user may obtain certain character dots address using character code.

5.6.1 ASCII

5X7 ASCII

Parameter：

ASCIICode：ASCII character code（8bits）

Address：Address of ASCII character data in chip.

Calculation of character address：

if(ASCIICODE >=0x20 && ASCIICODE <=0xFF)

addr =(ASCIICODE-0x20)*8

7X8 ASCII

Parameter：

ASCIICode：ASCII character code（8bits）

Address：Address of ASCII character data in chip.

Calculation of character address：

if(ASCIICODE >=0x20 && ASCIICODE <=0xFF)

Address =(ASCIICODE-0x20)*8 + 768

8X16 ASCII

Parameter：

ASCIICode：ASCII character code（8bits）

Address：Address of ASCII character data in chip.

Calculation of character address：

if((unicode>=0x20)&&(unicode<=0xFF))

addr = (unicode-0x20)*hzsize+1536

16 dot proportional adjusted Arial ASCII

Parameter：

ASCIICode：ASCII character code（8bits）

Address：Address of ASCII character data in chip.

Calculation of character address：

计算方法：

if((unicode>=0x20)&&(unicode<=0xFF))

addr = (unicode-0x20)*34+3072

5.6.2 Unicode

8X16 Latin Character

Parameters:

FontCode: Unicode code (16bits)

Address: Address of character data in chip

Calculation of character address:

```
if (FontCode>=0x0020 && FontCode<=0x007F)
    Address=(FontCode-0x0020) * 16 +6336;
else if (FontCode>=0x00A0 && FontCode<=0x017F)
    Address=(FontCode-0x0040) * 16 +6336;
else if (FontCode>=0x01A0 && FontCode<=0x01CF)
    Address=(FontCode-0x01A0+320) * 16 +6336;
else if (FontCode>=0x01F0 && FontCode<=0x01FF)
    Address=(FontCode-0x01F0+368) * 16 +6336;
else if (FontCode>=0x0210 && FontCode<=0x021F)
    Address=(FontCode-0x0210+384) * 16 +6336;
else if (FontCode>=0x1EA0 && FontCode<=0x1EFF)
    Address=(FontCode-0x1EA0+400) * 16 +6336
```

8X16 Greek Character

Parameters:

FontCode: Unicode code (16bits)

Address: Address of character data in chip

Calculation of character address:

```
if (FontCode>=0x0370 && FontCode<=0x03CF)
Address=(FontCode-0x0370) * 16 +14272
```

8X16 Cyrillic Character

Parameters:

FontCode: Unicode code (16bits)

Address: Address of character data in chip

Calculation of character address:

```
if (FontCode>=0x0400 && FontCode<=0x045F)
```

Address=(FontCode-0x0400) * 16 +15808
else if (FontCode>=0x0490 && FontCode<=0x04FF)
Address=(FontCode-0x0490+96) * 16 +15808

8X16 Hebrew Character

Parameters:

FontCode: Unicode code (16bits)

Address: Address of character data in chip

Calculation of character address:

if (FontCode>=0x0590 && FontCode<=0x05FF)
Address=(FontCode-0x0590) * 16 +19136

8X16 Thai Character

Parameters:

FontCode: Unicode code (16bits)

Address: Address of character data in chip

Calculation of character address:

if (FontCode>=0x0E00 && FontCode<=0x0E5F)
Address=(FontCode-0x0E00) * 16 +20928

16 Proportional Adjusted Latin Character

Parameters:

FontCode: Unicode code (16bits)

Address: Address of character data in chip

Calculation of character address:

if (FontCode>=0x0020 && FontCode<=0x007F)
Address=(FontCode-0x0020) * 34 +22976;
else if (FontCode>=0x00A0 && FontCode<=0x017F)
Address=(FontCode-0x00A0+96) * 34 +22976;
else if (FontCode>=0x01A0 && FontCode<=0x01CF)
Address=(FontCode-0x01A0+320) * 34 +22976;
else if (FontCode>=0x01F0 && FontCode<=0x01FF)
Address=(FontCode-0x01F0+368) * 34 +22976;
else if (FontCode>=0x0210 && FontCode<=0x021F)
Address=(FontCode-0x0210+384) * 34 +22976;
else if (FontCode>=0x1EA0 && FontCode<=0x1EFF)
Address=(FontCode-0x1EA0+400) * 34 +22976

16 Proportional Adjusted Greek Character

Parameters:

FontCode: Unicode code (16bits)

Address: Address of character data in chip

Calculation of character address:

if (FontCode>=0x0370 && FontCode<=0x03CF)
Address=(FontCode-0x0370) * 34 +39840

16 Proportional Adjusted Cyrillic Character

Parameters:

FontCode: Unicode code (16bits)

Address: Address of character data in chip

Calculation of character address:

```
if (FontCode>=0x0400 && FontCode<=0x045F)
    Address=(FontCode-0x0400) * 34 +43104;
else if (FontCode>=0x0490 && FontCode<=0x04FF)
    Address=(FontCode-0x0490+96) * 34 +43104;
```

16 Proportional Adjusted Arabic Character

Parameters:

unicode_alb: Unicode code (16bits)

Address: Address of character data in chip

Calculation of character address:

```
BaseAdd= 80320;
if( unicode_alb >= 0x0600 && unicode_alb <= 0x06FF )
    Address = 34*(unicode_alb-0x0600)+ 50176;
else if( unicode_alb >= 0xfb50 && unicode_alb <= 0xfbff )
    Address = 34*(16*16+unicode_alb-0xfb50)+ 50176;
else if( unicode_alb >= 0xfe70 && unicode_alb <= 0xfeff )
    Address = 34*(16*11+16*16+unicode_alb-0xfe70)+ 50176
```

15X16 GB2312 Simplified Chinese

Parameters：

GBCode: Character code.

MSB: High byte of GB code.

LSB: Low byte of GB code.

Address: Address of character data in chip.

BaseAdd：Base address of font in chip.

Calculation of character address：

```
if(MSB >=0xA1 && MSB <= 0Xa9 && LSB >=0xA1)
Address =( (MSB - 0xA1) * 94 + (LSB - 0xA1))*32+ 69760;
else if(MSB >=0xB0 && MSB <= 0xF7 && LSB >=0xA1)
Address = ((MSB - 0xB0) * 94 + (LSB - 0xA1)+ 846)*32+ 69760
```

5.6.3 ISO8859

Parameters:

FontCode: Unicode code (16bits)

Address: Address of character data in chip

Calculation of character address:

ISO8859-1

```
if(FontCode >=0x0080 && FontCode <=0x00FF)
```

address =(FontCode-0x80) * 8 + 657360;

ISO8859-2：

if(FontCode >=0x0080 && FontCode <=0x00FF)

address =(FontCode-0x80) * 8 + 657360+1024;

ISO8859-3：

if(FontCode >=0x0080 && FontCode <=0x00FF)

address =(FontCode-0x80) * 8 + 657360+1024+1024;

ISO8859-4：

if(FontCode >=0x0080 && FontCode <=0x00FF)

address =(FontCode-0x80) * 8 + 657360+1024+1024+1024;

ISO8859-5：

if(FontCode >=0x0080 && FontCode <=0x00FF)

address =(FontCode-0x80) * 8 + 657360+1024+1024+1024+1024

ISO8859-7：

if(FontCode >=0x0080 && FontCode <=0x00FF)

address =(FontCode-0x80) * 8 + 657360+1024+1024+1024+1024+1024;

ISO8859-8：

if(FontCode >=0x0080 && FontCode <=0x00FF)

address =(FontCode-0x80) * 8 + 657360+1024+1024+1024+1024+1024+1024;

ISO8859-9：

if(FontCode >=0x0080 && FontCode <=0x00FF)

address =(FontCode-0x80) * 8 + 657360+1024+1024+1024+1024+1024+1024+1024;

ISO8859-10：

if(FontCode >=0x0080 && FontCode <=0x00FF)

address =(FontCode-0x80) * 8 + 657360+1024+10241024+1024+1024+1024+1024+1024;

ISO8859-11：

if(FontCode >=0x0080 && FontCode <=0x00FF)

address =(FontCode-0x80) * 8 + 657360+1024+1024+10241024+1024+1024+1024+1024+1024;

ISO8859-13：

if(FontCode >=0x0080 && FontCode <=0x00FF)

address =(FontCode-0x80) * 8 +
657360+1024+1024+10241024+1024+1024+1024+1024+1024+1024;

ISO8859-14：

if(FontCode >=0x0080 && FontCode <=0x00FF)

address =(FontCode-0x80) * 8 +

657360+1024+1024+1024+10241024+1024+1024+1024+1024+1024+1024;

ISO8859-15：

if(FontCode >=0x0080 && FontCode <=0x00FF)

address =(FontCode-0x80) * 8 +

657360+10241024+1024+1024+10241024+1024+1024+1024+1024+1024+1024;

ISO8859-16：

if(FontCode >=0x0080 && FontCode <=0x00FF)

address =(FontCode-0x80) * 8 +

657360+10241024+1024+1024+10241024+1024+1024+1024+1024+1024+1024+1024;

5.6.4 LCM Character

5*10 LCM-1

Parameters:

FontCode: Unicode code (16bits)

Address: Address of character data in chip

Calculation of character address:

if (FontCode>=0x0000 && FontCode<=0x00FF)

Address=FontCode * 10 +671696;

5*10 LCM-2

Calculation of character address:

if (FontCode>=0x0000 && FontCode<=0x00FF)

Address=FontCode * 10 +671696+2560;

5*10 LCM-3

Calculation of character address:

if (FontCode>=0x0000 && FontCode<=0x00FF)

Address=FontCode * 10 +671696+2560+2560;

5*10 LCM-8

Calculation of character address:

if (FontCode>=0x0000 && FontCode<=0x00FF)

Address=FontCode * 10 +671696+2560+2560+2560;

5*10 LCM-11

Calculation of character address:

if (FontCode>=0x0000 && FontCode<=0x00FF)

Address=FontCode * 10 +671696+2560+2560+2560+2560;

5*10 LCM-12

Calculation of character address:

if (FontCode>=0x0000 && FontCode<=0x00FF)

Address=FontCode * 10 +671696+2560+2560+2560+2560+2560;

5*10 LCM-13

Calculation of character address:

if (FontCode>=0x0000 && FontCode<=0x00FF)

Address=FontCode * 10 +671696+2560+2560+2560+2560+2560+2560;

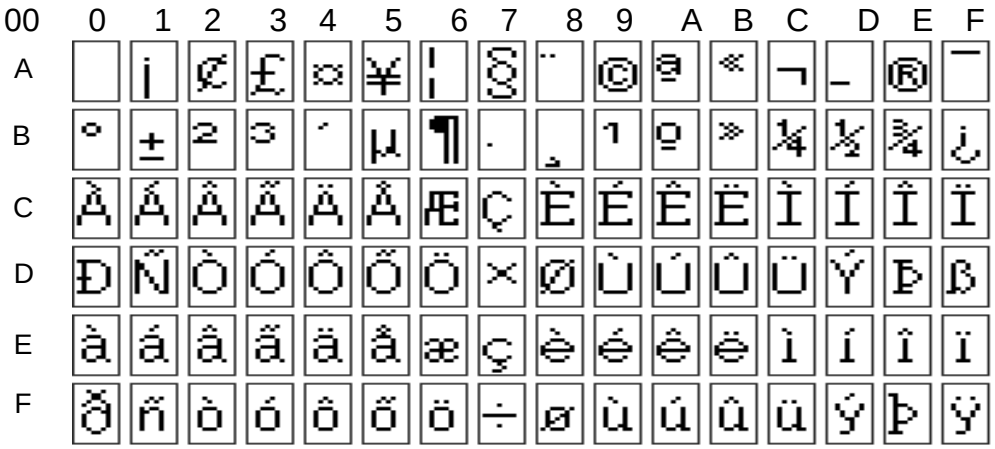
6 Appendix

unicode Section

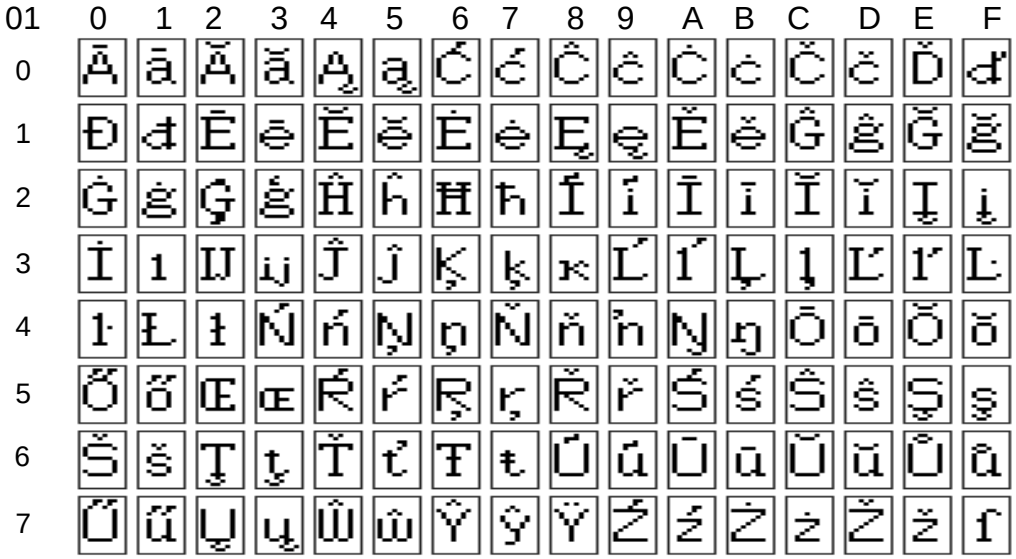
Unicode section include Latin, Greek, Cyrillic, Hebrew, Thai, and Arabic.

6.1.1 拉丁文系（376 characters）

Unicode section include Latin -496 characters.
Scope of code：0x20~0x70、0xA0~0xFF、0x0100~0x0170、0x01A0~0x01CF、0x01F0~0x01FF、0x0210~0x021F、0x1EA0~0x1EFF、0x1EA0~0x1EFF。
Note：The scope of code for “Latin Basic” equal to ASCII code, which is 0020~007E, therefore not listed in Unicode-Latin Section.



Unicode section -Latin



6.1.2 Cyrillic (208 characters)

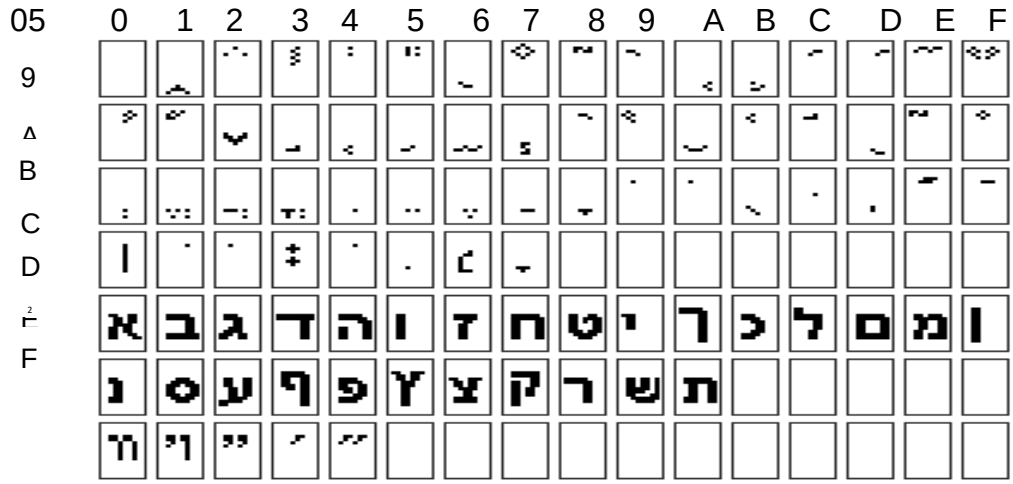
Unicode section-Cyrillic ,total of 208 characters.
Scope of code：0x0400~0x045F、0x0490~0x04FF.
Unicode section-Cyrillic 208 characters.

6.1.3 Greek (96 characters)

Unicode section-Greek total of 96 characters.
Scope of code：0x0370~0x03CF.
Unicode section-Greek.

6.1.4 Hebrew (112 characters)

Unicode Section-Hebrew total of 112 characters.
Scope of code：0x0590~0x05FF.



Thai (128 characters)

Unicode 字符区-Thai total of 128 characters.

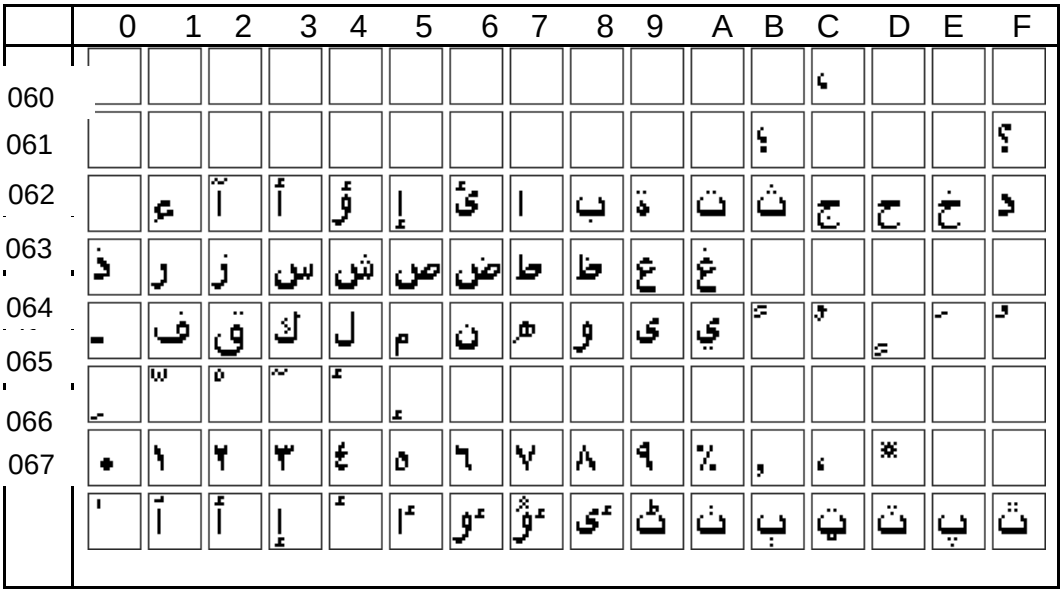
Code of Scope：0x0E00~0x0E7F。

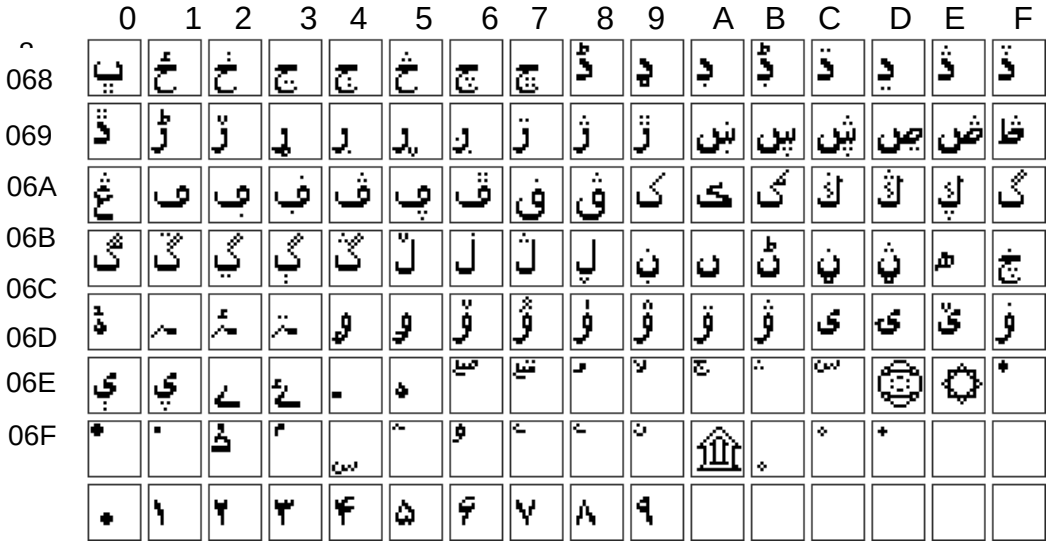
Arabic

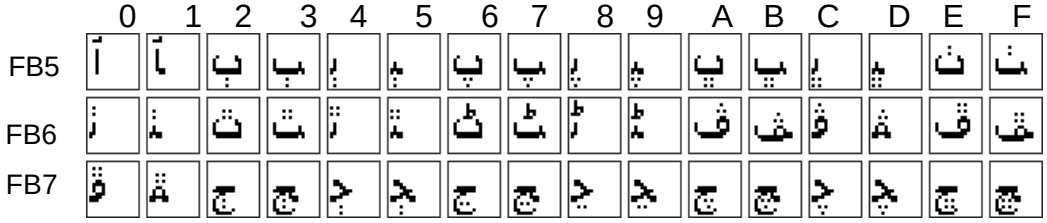
Unicode section-Arabic total of 576 characters。

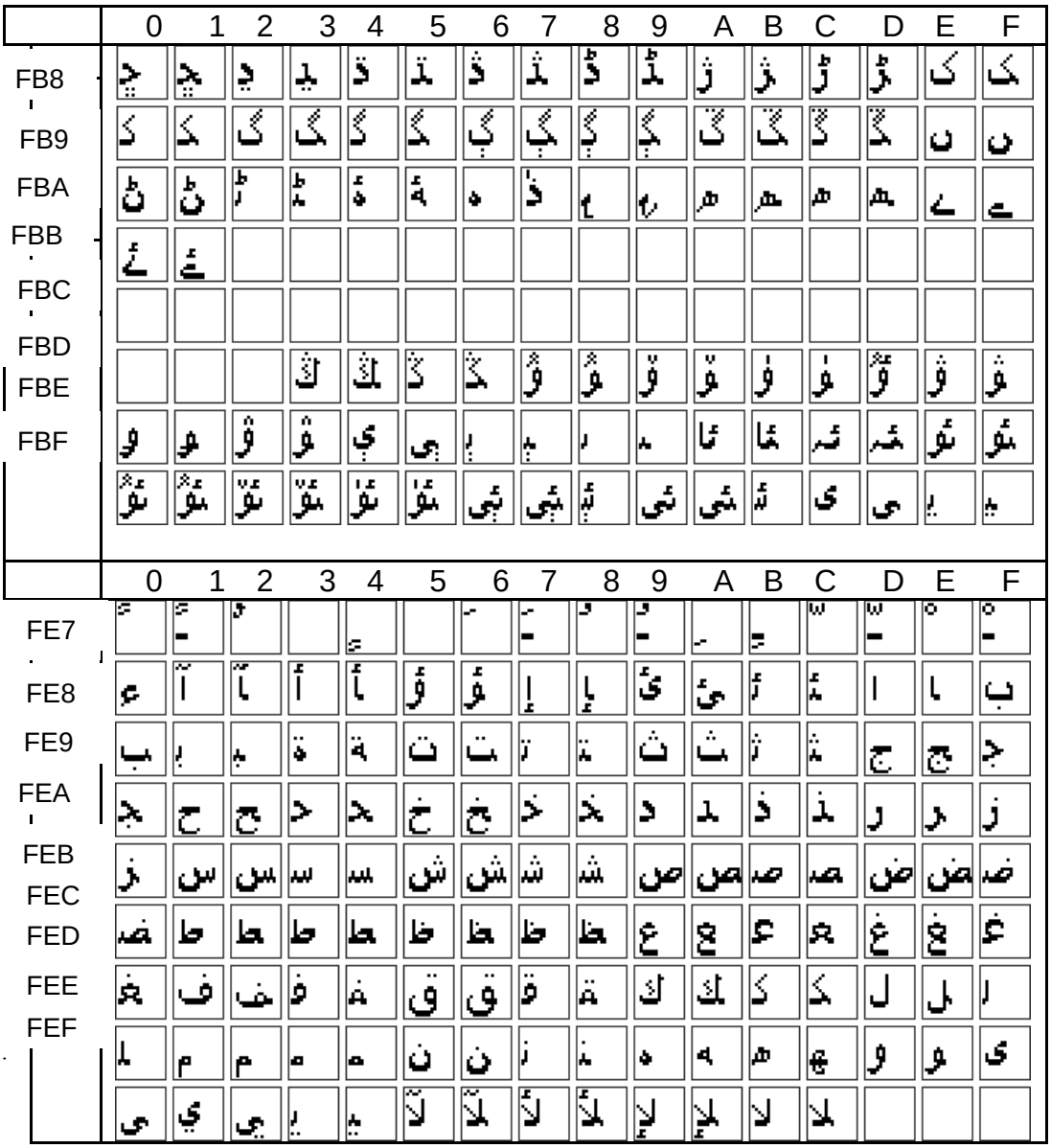
Scope of code：0x0600~0x06FF、0xFB50~0xFBFF、0xFE70~0xFEFF。

Unicode section-Arabic





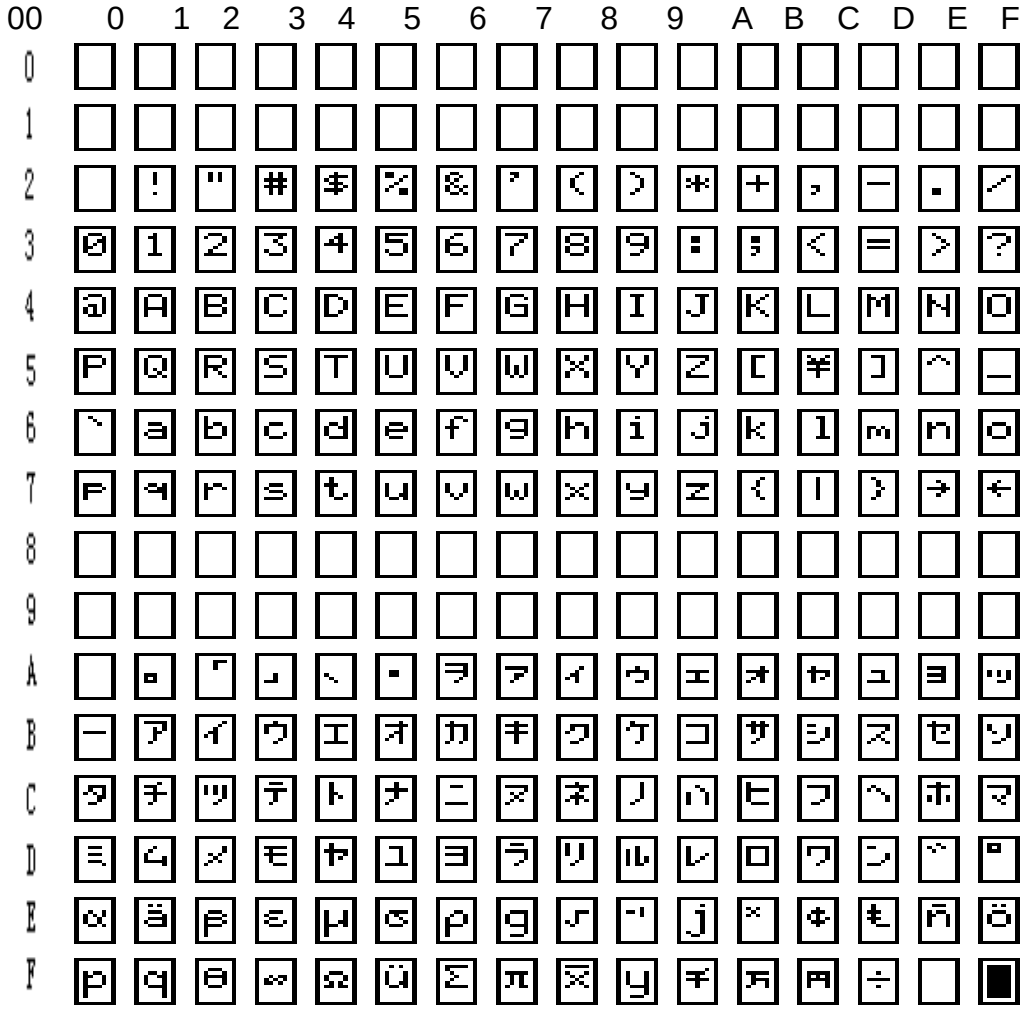



0 1 2 3 4 5 6 7 8 9 A B C D E F
FB8
FB9
FBA
FBB
FBC
FBD
FBE
FBF
0 1 2 3 4 5 6 7 8 9 A B C D E F
FE7
FE8
FE9
FEA
FEB
FEC
FED
FEE
FEF

6.2 LCM Characters- Including LCM 5X10、LCM5X7

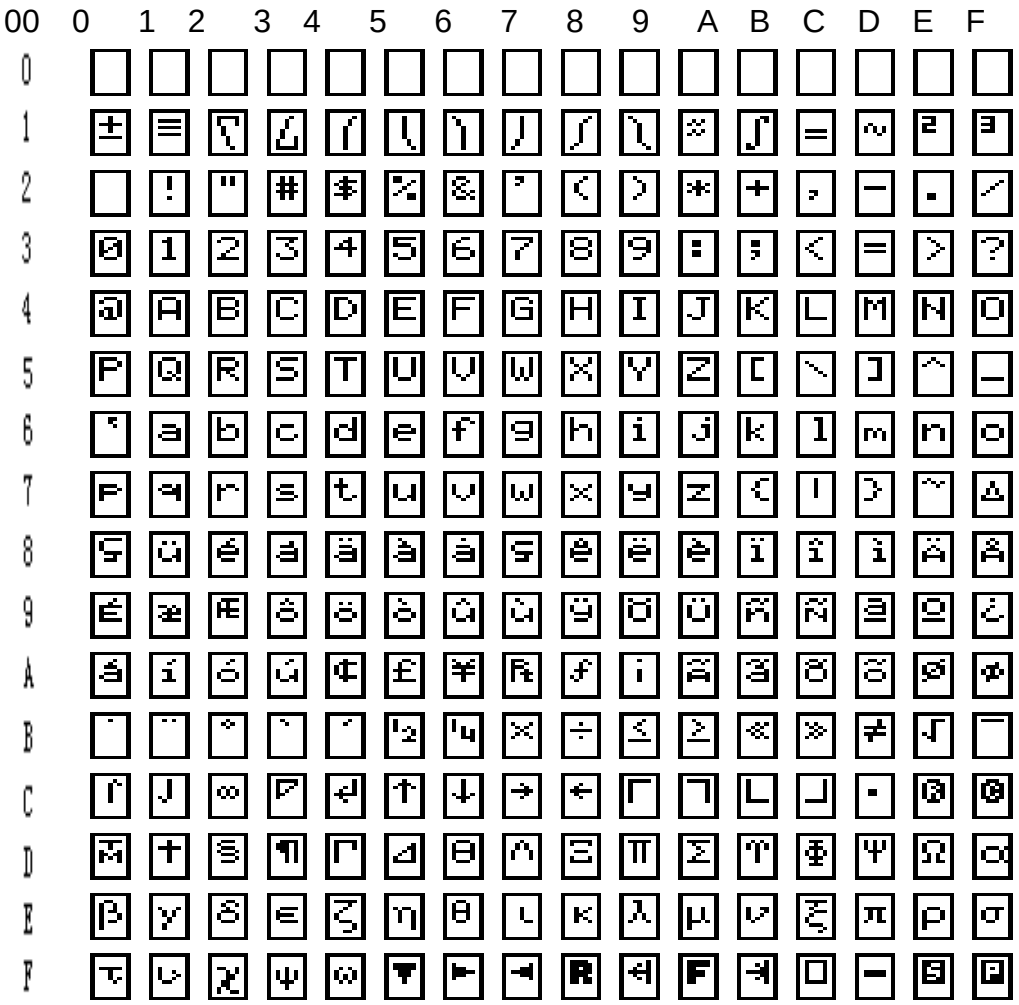
6.2.1 **LCM 5X10**

LCM5X10-1

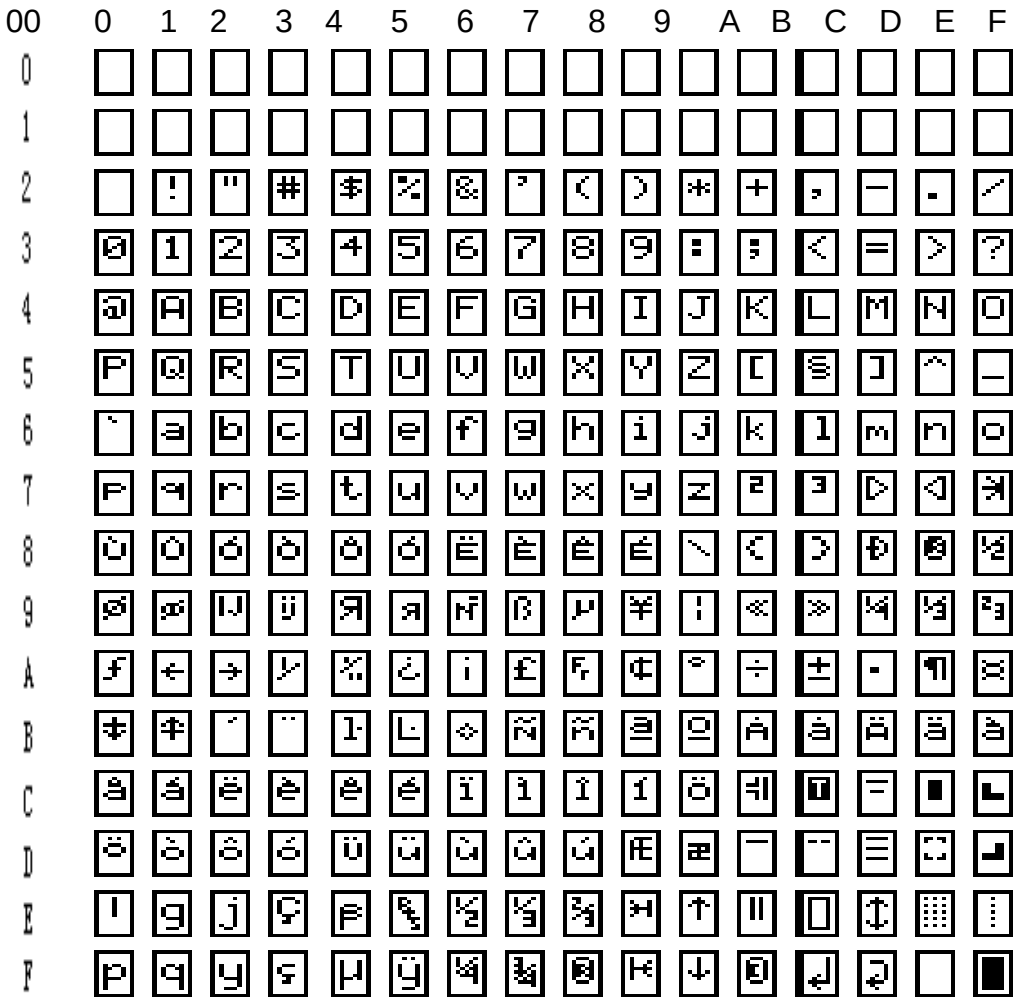


LCM5X10-2

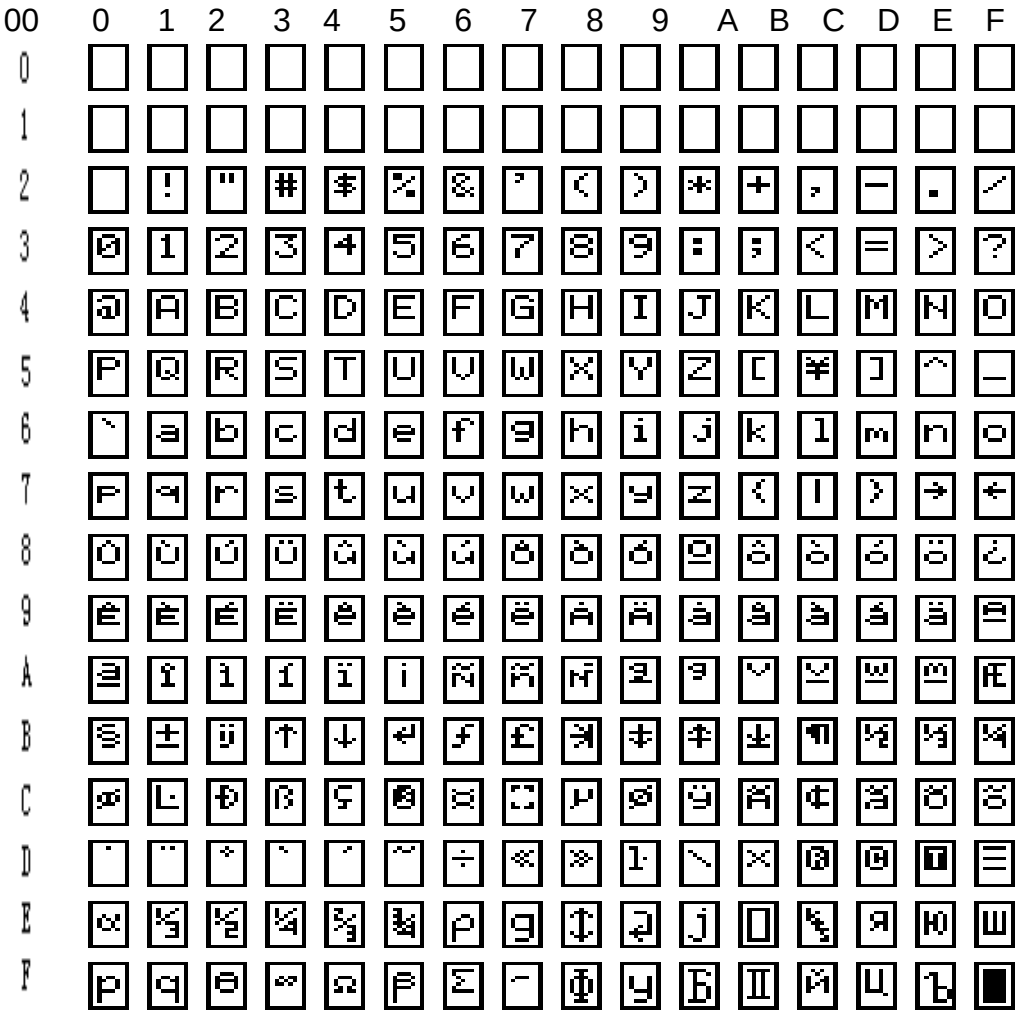
LCM5X10-3



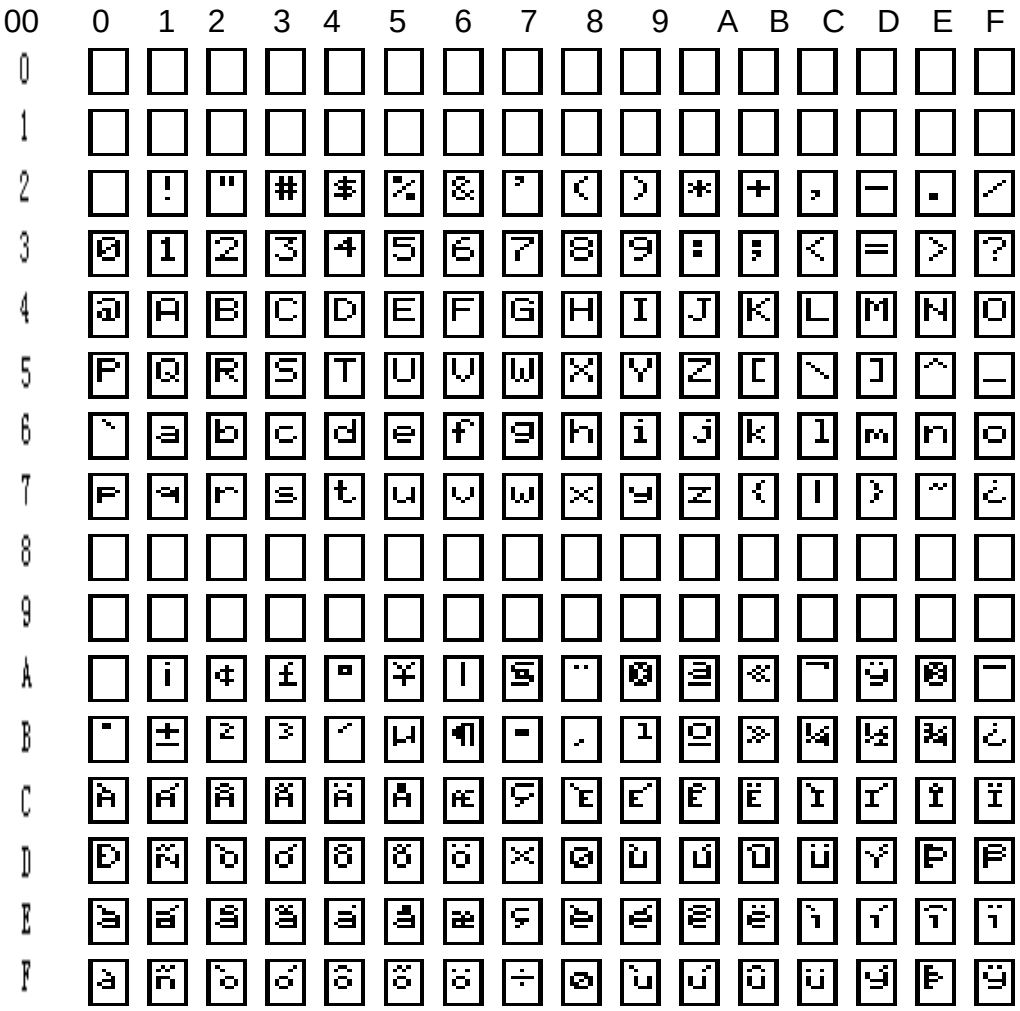
LCM5X10-8



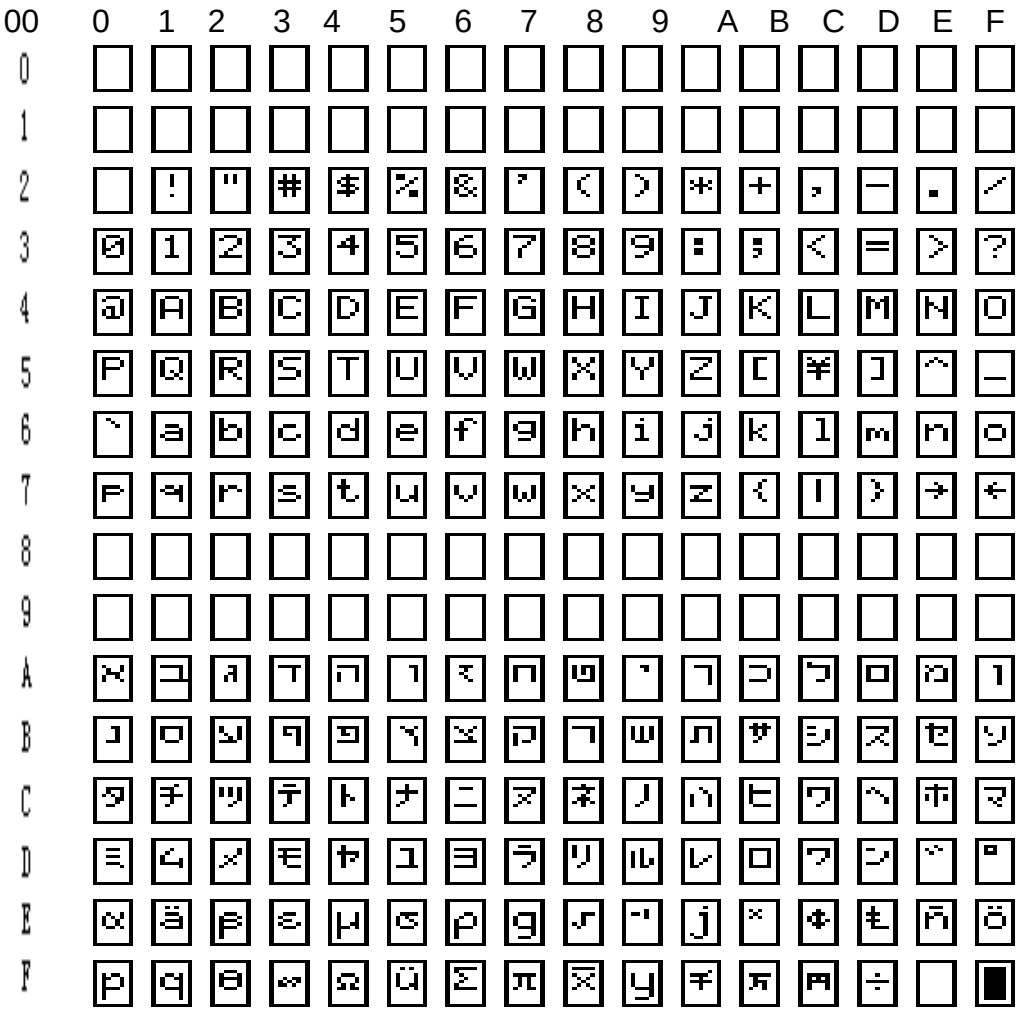
LCM5X10-11



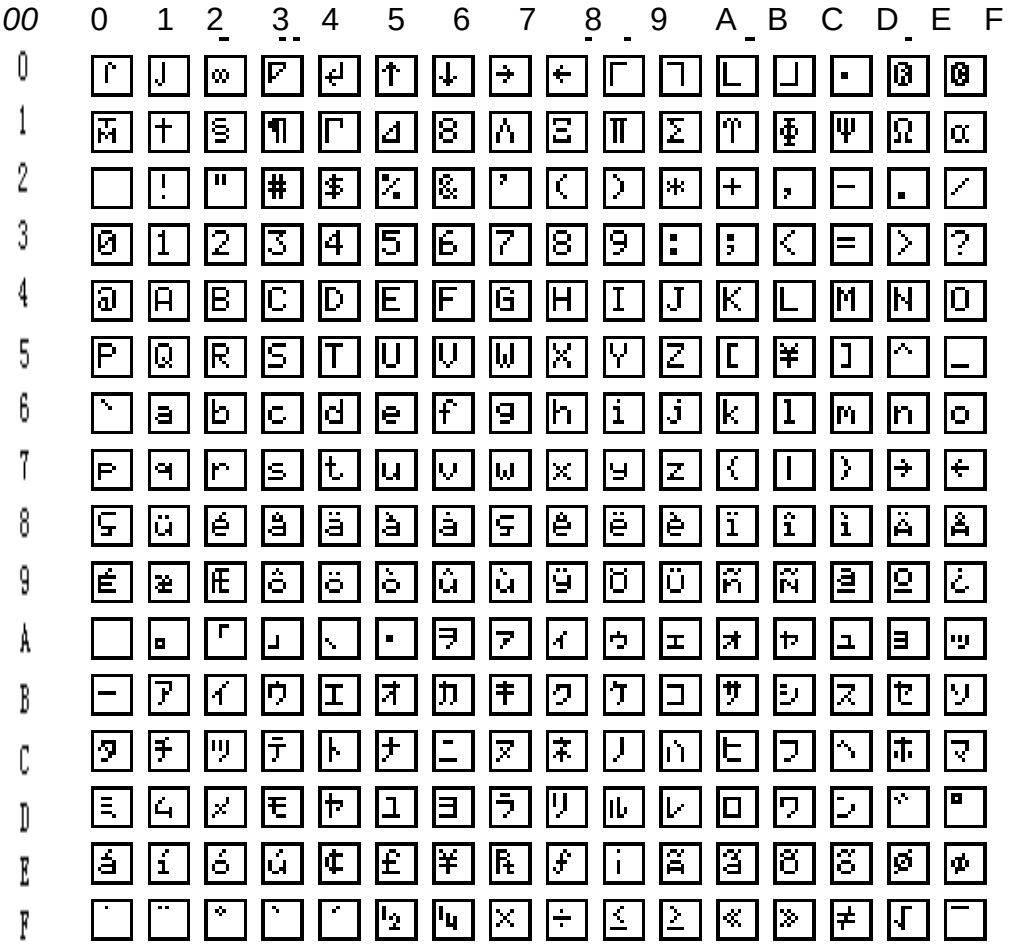
LCM5X10-12



LCM5X10-13



6.2.2 LCM 5X7（7032 Compatibel）Character Set



6.3 177 国外文字库总表

177 Coutries Language Check List

Language Family	Area	No.	Country	Language	ISO-8859
Latin (English)	European	1	Britain or United Kingdom	English	ISO8859-1
		2	Ireland		
	North America	3	USA	English	ISO8859-1
		4	Canada	English、French	ISO8859-1
		5	Belize	English	ISO8859-1
		6	Jamaica		
		7	Trinidad and Tobago		
		8	Bahamas		
		9	Antigua and Barbuda		
		10	Dominica		
		11	St.Vincent		
		12	St.Lucia		
		13	Grenada		
		14	St.Kitts-Nevis		
	South Africa	15	Guyana	English	ISO8859-1
	Australia	16	Australia	English	ISO8859-1
		17	New Zealand		
		18	Tonga		
		19	Fiji		
		20	Palau		
		21	Solomon		
		22	Vanuatu		
		23	Kiribati		
		24	Nauru		
		25	Marshall Islands		
	Africa	26	South Africa	English、South Africa Dutch	ISO8859-1
		27	Zimbabwe	English	ISO8859-1
		28	Gambia		
		29	Sierra Leone		
		30	Liberia		
		31	Ghana		
		32	Nigeria		
		33	Uganda		
		34	Zambia		
		35	Malawi		
		36	Seychelles		
		37	Mauritius		
		38	Botswana		
		39	Namibia		
		40	Lesotho		
Latin （French）	Europe	41	France	French	ISO8859-15
		42	Belgium	French、Dutch	ISO8859-15
		43	Monaco	French、Italian	ISO8859-15
	North America	44	Haiti	French	ISO8859-15
	Africa	45	Senegal		ISO8859-15

		46	Mali	French	
		47	Burkina Faso		
		48	Guinea		
		49	cote dlvoire		
		50	Togo		
		51	Benin		
		52	Niger		
		53	Cameroon		
		54	Chad		
		55	Central African Republic		
Latin（French）	Africa	56	Djibouti	French	ISO8859-15
		57	Burundi		
		58	Republic of Democratic Congo		
		59	Congo		
		60	Gabon		
		61	Comoros		
		62	Madagascar		
Latin（Spanish）	Europe	63	Spain	Spanish、Catalan	ISO8859-1、-15
		64	Andorra	Spanish	ISO8859-1、-15
	North America	65	Mexico	Spanish	ISO8859-1 ISO8859-15
		66	Guatemala		
		67	Costa Rica		
		68	Panama		
		69	Dominican Republic		
		70	El Salvador		
		71	Honduras		
		72	Nicaragua		
		73	Puerto Rico		
		74	Cuba		
	South Africa	75	Venezuela	Spanish	ISO8859-1 ISO8859-15
		76	Colombia		
		77	Peru		
		78	Argentina		
		79	Ecuador		
		80	Chile		
		81	Uruguay		
		82	Paraguay		
		83	Bolivia		
	Africa	84	Equatorial New Guinea	Spanish	ISO8859-1 ISO8859-15
		85	Ceuta and Melilla		
Latin（Portuguese）	Europe	86	Portugal	Portuguese	ISO8859-1 ISO8859-15
	South Africa	87	Brazil		
	Africa	88	Cape Verde		
		89	Guinea-Bissau		
		90	Sao Tome and Principe		
		91	Angola		
		92	Mozambique		
Latin（German）	Europe	93	Germany	German	ISO8859-1、-15
		94	Switzerland	German、French	ISO8859-1、-15

		95	Austria	German	ISO8859-1、-15
		96	Luxembourg	German、French	ISO8859-1、-15
		97	Liechtenstein	German	ISO8859-1、-15
Latin（Dutch）	Europe	98	Holland	Dutch	ISO8859-1 ISO8859-15
	South Africa	99	Surinam		
Latin（Nordic Europe）	Europe	100	Denmark	Dannish	ISO8859-1、-10
		101	Norway	Norwegian	ISO8859-1、-10
		102	Sweden	Swedish	ISO8859-1、-10
		103	Faroes，The	Faroese	ISO8859-1、-10
		104	Greenland	Greelandic	ISO8859-1、-10
		105	Iceland	Icelandic	ISO8859-1、-10
		106	Finland	Finnish、Swedish	ISO8859-13、-15
		107	Estonia	Estonian	ISO8859-4、-13
		108	Latvia	Latvian	ISO8859-4、-13
		109	Lithuania	Lithuanian	ISO8859-4、-13
Latin（Central Europe）	Europe	110	Czech	Czech	ISO8859-2
		111	Slovakia	Slovak	ISO8859-2
		112	Poland	Polish	ISO8859-2、-16
		113	Hungary	Hungarian	ISO8859-2、-16
		114	Romania	Romannian	ISO8859-16
	Europe	115	Slovenia	Slovenian	ISO8859-2、-16
		116	Croatia	Crotian	ISO8859-2、-16
Latin（Southern Europe）	Europe	117	Italy	Italian	ISO8859-1 ISO8859-16
		118	San Marino		
		119	Vatican		
		120	Turkey	Turkish	ISO8859-9
		121	Malta	Maltese	ISO8859-3、-9
		122	Albania	Albanian	ISO8859-1、-16
Latin（Southeast Asia）	Asia	123	Vietnam	Vietnamese	ISO8859-1
		124	Malaysia	Malaysian	ISO8859-1
		125	Brunei		
		126	Indonesia	Indonesian	ISO8859-1
		127	East Timor		
		128	Philippines，The	English, Tagalog	ISO8859-1
Latin（Africa）	Africa	129	Kenya	Kiswahili	ISO8859-1
		130	Tanzania		
Cyrillic（Eastern Europe）	Europe	131	Russia	Rusian	ISO8859-5
		132	Byelorussia or Belarus		
		133	Ukraine	RussianUkrainian	ISO8859-5
		134	Bulgaria	Bulgarian	ISO8859-5
		135	Moldova	Russian	ISO8859-5
		136	F.R.Yugoslavia	Serbian	ISO8859-5
		137	Barbados	Serbian	ISO8859-5
		138	Macedonia	Macedonian	ISO8859-5
Cyrillic（Asia）	Asia	139	Azerbaijan	Azeri	ISO8859-5
		140	Kirghizstan	Kyrgyz	ISO8859-5
		141	Tajikistan	Tajik	ISO8859-5
		142	Turkmenistan	Turkmen	ISO8859-5

		143	Uzbekistan	Uzbek	ISO8859-5
		144	Kazakhstan	Kazakh	ISO8859-5
		145	Mongolia	Mongolian	ISO8859-5
Greek	Asia	146	Greece	Greek	ISO8859-7
		147	Cyprus		
Arabic（Africa）	Africa	148	Egypt	Arabic	ISO8859-6
		149	Tunisia		
		150	Libya		
		151	Morocco		
		152	Algeria		
		153	Sudan，The		
		154	Somalia		
		155	Djibouti		
		156	Mauritania		
Arabic（Asia）	Asia	157	Syria	Arabic	ISO8859-6
		158	United Arab Emirates，The		
		159	Lebanon		
		160	Yemen		
		161	Kuwait		
		162	Qatar		
		163	Bahrain		
		164	Oman		
		165	Jordan		
		166	Iraq		
		167	Saudi Arabia		
		168	Palestine		
		169	Iran	Farsi	
		170	Pakistan	Urdu、Arabic	
		171	Afghanistan	Pashto	
Hebrew	Asia	172	Israel	Hebrew	ISO8859-8
Thai	Asia	173	Thailand	Thai	ISO8859-11
Japan	Asia	174	Japan	Japan	JIS0208
Korea	Asia	175	Korea	Korea	KSC5601
China	Asia	176	China	China	GB2312
China		177	Singapore	China	GB2312

6.4 177 国外文拼音索引表(汉语拼音排序)

177 国外文字库索引表(汉语拼音排序)

首字母	国家	总表序号
A(15)	阿富汗	171
	阿尔巴尼亚	122
	阿尔及利亚	152
	阿曼	164
	阿根廷	78
	阿联酋	158
	阿塞拜疆	139
	爱尔兰	2
	爱沙尼亚	107
	奥地利	95
	澳大利亚	16
	安道尔	64
	安提瓜和巴布达	9
	安哥拉	91
	埃及	148
B(20)	巴拿马	68
	巴林	163
	巴基斯坦	170
	巴勒斯坦	168
	巴拉圭	82
	巴哈马	8
	巴西	87
	白俄罗斯	132
	冰岛	105
	贝宁	51
	伯利兹	5
	比利时	42
	波罗黎各	73
	玻利维亚	83
	波兰	112
	布隆迪	57
	波黑	137
	保加利亚	134
	布基纳法索	47
	博茨瓦纳	38
C(1)	赤道新几内亚	84
D(6)	德国	93
	丹麦	100
	多米尼加	10
	多米尼加共和国	69
	东帝汶	127
	多哥	50
E(2)	俄罗斯	131
	厄瓜多尔	79

首字母	国家	总表序号
F(7)	佛得角	88
	梵提冈	119
	法罗群岛	103
	芬兰	106
	菲律宾	128
	法国	41
	斐济	19
G(8)	冈比亚	28
	古巴	74
	哥伦比亚	76
	格林纳达	13
	格陵兰	104
	刚果	59
	哥斯达黎加	67
	圭亚那	15
H(5)	韩国	175
	海地	44
	洪都拉斯	71
	荷兰	98
	哈萨克斯坦	144
J(10)	吉尔吉斯斯坦	140
	吉布提	56
	津巴布韦	27
	加蓬	60
	加拿大	4
	加纳	31
	几内亚	48
	几内亚比绍	89
	基里巴斯	23
	捷克	110
K(7)	喀麦隆	53
	科摩罗	61
	科特迪瓦	49
	卡塔尔	162
	肯尼亚	129
	克罗地亚	116
	科威特	161
L(9)	利比里亚	30
	利比亚	150
	拉脱维亚	108
	立陶宛	109
	罗马尼亚	114
	列支敦士登	97
	卢森堡	96

首字母	国家	总表序号
	莱索托	40
	黎巴嫩	159
M(18)	马耳他	121
	马其顿	138
	马达加斯加	62
	马来西亚	124
	马拉维	35
	马里	46
	马绍尔群岛	25
	摩尔多瓦	135
	摩纳哥	43
	摩洛哥	151
	毛里求斯	37
	毛里塔尼亚	156
	秘鲁	77
	美国	3
	蒙古	145
	墨西哥	65
	民主刚果	58
	莫桑比克	92
N(8)	纳米比亚	39
	南非	26
	瑙鲁	24
	尼加拉瓜	72
	尼日利亚	32
	尼日尔	52
	南斯拉夫联盟	136
	挪威	101
P(2)	葡萄牙	86
	帕劳	20
R(3)	瑞典	102
	日本	174
	瑞士	94
S(17)	萨尔瓦多	70
	圣马力诺	118
	圣多美和普林西比	90
	圣基茨—尼维斯	14
	圣文森特	11
	圣卢西亚岛	12
	塞浦路斯	147
	塞内加尔	45
	塞拉利昂	29
	塞舌尔	36
	索马里	154

177 国外文字库索引表(汉语拼音排序)

首字母	国家	总表序号
S	苏丹	153
	沙特阿拉伯	167
	所罗门	21
	斯洛伐克	111
	斯洛文尼亚	115
	苏里南	99
T(8)	土耳其	120
	土库曼斯坦	142
	突尼斯	149
	特立尼达和多巴哥	7
	汤加	18
	塔吉克斯坦	141
	泰国	173
	坦桑尼亚	130
W(8)	瓦努阿图	22

首字母	国家	总表序号
	危地马拉	66
	文莱	125
	乌拉圭	81
	乌克兰	133
	乌干达	33
	乌兹别克斯坦	143
	委瑞内拉	75
X(8)	西班牙	63
	休达和梅利亚	85
	希腊	146
	叙利亚	157
	新西兰	17
	新加坡	177
	西撒哈拉	155
	匈牙利	113

首字母	国家	总表序号
Y(10)	牙买加	6
	也门	160
	意大利	117
	约旦	165
	印度尼西亚	126
	越南	123
	伊拉克	166
	伊朗	169
	英国	1
	以色列	172
Z(5)	赞比亚	34
	中非	55
	中国	176
	乍得	54
	智利	80

6.5 177 国外文字库索引表(英文字母排序)

177 国外文字库索引表(英文字母排序)

首字母	国家	总表序号
A(10)	Afghanistan	171
	Albania	122
	Algeria	152
	Andorra	64
	Angola	91
	Antigua and Barbuda	9
	Argentina	78
	Australia	16
	Austria	95
	Azerbaijan	139
B(15)	Bahamas	8
	Bahrain	163
	Barbados	137
	Belgium	42
	Belize	5
	Benin	51
	Bolivia	83
	Botswana	38
	Brazil	87
	Britain 或 United Kingdom	1
	Brunei	125
	Bulgaria	134
	Burkina Faso	47
	Burundi	57
	Byelorussia 或 Belarus	132
C(17)	Cameroon	53
	Canada	4
	Cape Verde	88
	Central African Republic	55
	Ceuta and Melilla	85
	Chad	54
	Chile	80
	China	176
	Colombia	76
	Comoros	61
	Congo	59
	Costa Rica	67
	cote dlvoire	49
	Croatia	116
	Cuba	74
	Cyprus	147
	Czech	110
D(4)	Denmark	100
	Djibouti	56
	Dominica	10
	Dominican Republic	69
E(6)	East Timor	127
	Ecuador	79
	Egypt	148
	El Salvador	70
	Equatorial New Guinea	84
	Estonia	107
F(5)	F.R.Yugoslavia	136
	Faroes，The	103
	Fiji	19
	Finland	106
	France	41
G(11)	Gabon	60
	Gambia	
	Germany	93
	Ghana	31
	Greece	146
	Greenland	104
	Grenada	13
	Guatemala	66
	Guinea	48
	Guinea-Bissau	89
	Guyana	15
H(4)	Haiti	44
	Holland	98
	Honduras	71
	Hungary	113
I(6)	Iceland	105
	Indonesia	126
	Iran	169
	Iraq	166
	Israel	172
	Italy	117
J(3)	Jamaica	6
	Jordan	165
	Japan	174
K(5)	Kazakhstan	144
	Kenya	129
	Kirghizstan	140
	Kiribati	23
	Kuwait	161
	Korea	175
L(9)	Latvia	108
	Lebanon	159
	Lesotho	40
	Liberia	30
	Libya	150
	Liechtenstein	97
	Lithuania	109
	Lreland	2
	Luxembourg	96
M(15)	Macedonia	138
	Madagascar	62
	Malawi	35
	Malaysia	124
	Mali	46
	Malta	121
	Marshall Islands	25
	Mauritania	156
	Mauritius	37
	Mexico	65
	Moldova	135
	Monaco	43
	Mongolia	145
	Morocco	151
	Mozambique	92
N(7)	Namibia	39
	Nauru	24
	New Zealand	17
	Nicaragua	72
	Niger	52
	Nigeria	32

177 国外文字库索引表(英文字母排序)

首字母	国家	总表序号
	Norway	101
O(1)	Oman	164
P(10)	Pakistan	170
	Palau	20
	Palestine	168
	Panama	68
	Paraguay	82
	Peru	77
	Philippines，The	128
	Poland	112
	Portugal	86
	Puerto Rico	73
Q(1)	Qatar	162
R(3)	Republic of Democratic Congo	58
	Romania	114
	Russia	131
S(21)	San Marino	118
	Sao Tome and Principe	90
	Saudi Arabia	167
	Senegal	45
	Seychelles	36
	Sierra Leone	29
	Singapore	177
	Slovakia	111
	Slovenia	115
	Solomon	21
	Somalia	154
	South Africa	26
	Spain	63
	St.Kitts-Nevis	14
	St.Lucia	12
	St.Vincent	11
	Sudan，The	153
	Surinam	99
	Sweden	102
	Switzerland	94
	Syria	157
T(9)	Tajikistan	141
	Tanzania	130
	Thailand	173
	Togo	50
	Tonga	18
	Trinidad and Tobago	7
	Tunisia	149
	Turkey	120
	Turkmenistan	142
U(6)	Uganda	33
	Ukraine	133
	United Arab Emirates，The	158
	Uruguay	81
	USA	3
	Uzbekistan	143
V(4)	Vanuatu	22
	Vatican	119
	Venezuela	75
	Vietnam	123
W(1)	West Sahara	155
Y(1)	Yemen	160
Z(2)	Zambia	34
	Zimbabwe	27

6.6 ISO 8859-1 ~ ISO 8859-16

6.6.1 ISO 8859-1

Latin-1 Western European

Perhaps the most widely used part of ISO/IEC 8859, covering most Western European languages: Danish (partial), Dutch (partial), English, Faeroese, Finnish (partial), French (partial), German, Icelandic,
Irish, Italian, Norwegian, Portuguese, Rhaeto-Romanic, Scottish Gaelic, Spanish, and Swedish. Languages from other parts of the world are also covered, including: Eastern European Albanian, Southeast Asian Indonesian, as well as the African languages Afrikaans and Swahili. The missing euro sign and capital *Ÿ* are in the revised version ISO/IEC 8859-15.

ISO/IEC 8859-1															
	x0	x1	x2	x3	x4	x5	x6	x7	x8	x9	xA	xB	xC	xD	xE	xF
0x																
1x																
2x	*SP*	!	"	#	$	%	&	'	(	)	*	+	,	-	.	/
3x	0	1	2	3	4	5	6	7	8	9	:	;	<	=	>	?
4x	@	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
5x	P	Q	R	S	T	U	V	W	X	Y	Z	[	\	]	^	_
6x	`	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o
7x	p	q	r	s	t	u	v	w	x	y	z	{	|	}	~	
8x																
9x																
Ax	*NBSP*	¡	¢	£	¤	¥	¦	§	¨	©	ª	«	¬	*SHY*	®	¯
Bx	°	±	²	³	´	µ	¶	·	¸	¹	º	»	¼	½	¾	¿
Cx	À	Á	Â	Ã	Ä	Å	Æ	Ç	È	É	Ê	Ë	Ì	Í	Î	Ï
Dx	Ð	Ñ	Ò	Ó	Ô	Õ	Ö	×	Ø	Ù	Ú	Û	Ü	Ý	Þ	ß
Ex	à	á	â	ã	ä	å	æ	ç	è	é	ê	ë	ì	í	î	ï
Fx	ð	ñ	ò	ó	ô	õ	ö	÷	ø	ù	ú	û	ü	ý	þ	ÿ

6.6.2 ISO/IEC 8859-2

Latin-2 Central European

Supports those Central and Eastern European languages that use the Latin alphabet, including Bosnian,

Polish, Croatian, Czech, Slovak, Slovene, Serbian, and Hungarian. The missing euro sign can be found in version ISO/IEC 8859-16.

ISO/IEC 8859-2																
	x0	x1	x2	x3	x4	x5	x6	x7	x8	x9	xA	xB	xC	xD	xE	xF
0x																
1x																
2x	SP	!	"	#	$	%	&	'	(	)	*	+	,	-	.	/
3x	0	1	2	3	4	5	6	7	8	9	:	;	<	=	>	?
4x	@	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
5x	P	Q	R	S	T	U	V	W	X	Y	Z	[	\	]	^	_
6x	`	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o
7x	p	q	r	s	t	u	v	w	x	y	z	{	|	}	~	
8x																
9x																
Ax	NBSP	Ą	˘	Ł	¤	Ľ	Ś	§	¨	Š	Ş	Ť	Ź	SHY	Ž	Ż
Bx	°	ą	˛	ł	´	ľ	ś	ˇ	¸	š	ş	ť	ź	˝	ž	ż
Cx	Ŕ	Á	Â	Ă	Ä	Ĺ	Ć	Ç	Č	É	Ę	Ë	Ě	Í	Î	Ď
Dx	Đ	Ń	Ň	Ó	Ô	Ő	Ö	×	Ř	Ů	Ú	Ű	Ü	Ý	Ţ	ß
Ex	ŕ	á	â	ă	ä	ĺ	ć	ç	č	é	ę	ë	ě	í	î	ď
Fx	đ	ń	ň	ó	ô	ő	ö	÷	ř	ů	ú	ű	ü	ý	ţ	˙

6.6.3 ISO/IEC 8859-3

Latin-3 South European

Turkish, Maltese, and Esperanto. Largely superseded by ISO/IEC 8859-9 for Turkish and Unicode for Esperanto.

ISO/IEC 8859-3																
	x0	x1	x2	x3	x4	x5	x6	x7	x8	x9	xA	xB	xC	xD	xE	xF
0x																
1x																
2x	*SP*	!	"	#	$	%	&	'	(	)	*	+	,	-	.	/
3x	0	1	2	3	4	5	6	7	8	9	:	;	<	=	>	?
4x	@	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
5x	P	Q	R	S	T	U	V	W	X	Y	Z	[	\	]	^	_
6x	`	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o
7x	p	q	r	s	t	u	v	w	x	y	z	{	|	}	~	
8x																
9x																
Ax	*NBSP*	Ħ	˘	£	¤		Ĥ	§	¨	İ	Ş	Ğ	Ĵ	*SHY*		Ż
Bx	°	ħ	²	³	´	µ	ĥ	·	¸	ı	ş	ğ	ĵ	½		ż
Cx	À	Á	Â		Ä	Ċ	Ĉ	Ç	È	É	Ê	Ë	Ì	Í	Î	Ï
Dx		Ñ	Ò	Ó	Ô	Ġ	Ö	×	Ĝ	Ù	Ú	Û	Ü	Ŭ	Ŝ	ß
Ex	à	á	â		ä	ċ	ĉ	ç	è	é	ê	ë	ì	í	î	ï
Fx		ñ	ò	ó	ô	ġ	ö	÷	ĝ	ù	ú	û	ü	ŭ	ŝ	˙

6.6.4 ISO/IEC 8859-4

Latin-3 North European

Estonian, Latvian, Lithuanian, Greenlandic, and Sami.

ISO/IEC 8859-4																
	x0	x1	x2	x3	x4	x5	x6	x7	x8	x9	xA	xB	xC	xD	xE	xF
0x																
1x																
2x	*SP*	!	"	#	$	%	&	'	(	)	*	+	,	-	.	/
3x	0	1	2	3	4	5	6	7	8	9	:	;	<	=	>	?
4x	@	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
5x	P	Q	R	S	T	U	V	W	X	Y	Z	[	\	]	^	_
6x	`	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o
7x	p	q	r	s	t	u	v	w	x	y	z	{	|	}	~	
8x																
9x																
Ax	*NBSP*	Ą	ĸ	Ŗ	¤	Ĩ	Ļ	§	¨	Š	Ē	Ģ	Ŧ	*SHY*	Ž	¯
Bx	°	ą	˛	ŗ	´	ĩ	ļ	ˇ	¸	š	ē	ģ	ŧ	Ŋ	ž	ŋ
Cx	Ā	Á	Â	Ã	Ä	Å	Æ	Į	Č	É	Ę	Ë	Ė	Í	Î	Ī
Dx	Đ	Ņ	Ō	Ķ	Ô	Õ	Ö	×	Ø	Ų	Ú	Û	Ü	Ũ	Ū	ß
Ex	ā	á	â	ã	ä	å	æ	į	č	é	ę	ë	ė	í	î	ī
Fx	đ	ņ	ō	ķ	ô	õ	ö	÷	ø	ų	ú	û	ü	ũ	ū	˙

6.6.5 ISO/IEC 8859-5

Latin/Cyrillic

Covers mostly Slavic languages that use a Cyrillic alphabet, including Belarusian, Bulgarian, Macedonian, Russian, Serbian, and Ukrainian (partial)

ISO/IEC 8859-5																
	x0	**x1**	**x2**	**x3**	**x4**	**x5**	**x6**	**x7**	**x8**	**x9**	**xA**	**xB**	**xC**	**xD**	**xE**	**xF**
0x																
1x																
2x	*SP*	!	"	#	$	%	&	'	(	)	*	+	,	-	.	/
3x	0	1	2	3	4	5	6	7	8	9	:	;	<	=	>	?
4x	@	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
5x	P	Q	R	S	T	U	V	W	X	Y	Z	[	\	]	^	_
6x	`	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o
7x	p	q	r	s	t	u	v	w	x	y	z	{	|	}	~	
8x																
9x																
Ax	*NBSP*	Ё	Ђ	Ѓ	Є	S	I	Ї	J	Љ	Њ	Ћ	Ќ	*SHY*	Ў	Џ
Bx	А	Б	В	Г	Д	Е	Ж	З	И	Й	К	Л	М	Н	О	П
Cx	Р	С	Т	У	Ф	Х	Ц	Ч	Ш	Щ	Ъ	Ы	Ь	Э	Ю	Я
Dx	а	б	в	г	д	е	ж	з	и	й	к	л	м	н	о	п
Ex	р	с	т	у	ф	х	ц	ч	ш	щ	ъ	ы	ь	э	ю	я
Fx	№	ё	ђ	ѓ	є	s	i	ї	j	љ	њ	ћ	ќ	§	ў	џ

6.6.6 ISO/IEC 8859-6

Latin/Arabic

Covers the most common Arabic language characters. Doesn't support other languages using the Arabic script. Needs to be BiDi and cursive joining processed for display.

ISO/IEC 8859-6																
	x0	x1	x2	x3	x4	x5	x6	x7	x8	x9	xA	xB	xC	xD	xE	xF
0x																
1x																
2x	SP	!	"	#	$	%	&	'	(	)	*	+	،	-	.	/
3x	0	1	2	3	4	5	6	7	8	9	:	;	<	=	>	?
4x	@	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
5x	P	Q	R	S	T	U	V	W	X	Y	Z	[	\	]	^	_
6x	`	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o
7x	p	q	r	s	t	u	v	w	x	y	z	{	|	}	~	
8x																
9x																
Ax	NBSP				¤								؛	SHY		
Bx												؟				؟
Cx		ء	آ	أ	ؤ	إ	ئ	ا	ب	ة	ت	ث	ج	ح	خ	د
Dx	ذ	ر	ز	س	ش	ص	ض	ط	ظ	ع	غ					
Ex	ـ	ف	ق	ك	ل	م	ن	ه	و	ى	ي	ً	ٌ	ٍ	َ	ُ
Fx	ِ	ّ	ْ													

6.6.7 ISO/IEC 8859-7

Latin/Greek

Covers the modern Greek language (monotonic orthography). Can also be used for Ancient Greek written without accents or in monotonic orthography, but lacks the diacritics for polytonic orthography. These were introduced with Unicode.

ISO/IEC 8859-7																
	x0	**x1**	**x2**	**x3**	**x4**	**x5**	**x6**	**x7**	**x8**	**x9**	**xA**	**xB**	**xC**	**xD**	**xE**	**xF**
0x																
1x																
2x	*SP*	!	"	#	$	%	&	'	(	)	*	+	,	-	.	/
3x	0	1	2	3	4	5	6	7	8	9	:	;	<	=	>	?
4x	@	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
5x	P	Q	R	S	T	U	V	W	X	Y	Z	[	\	]	^	_
6x	`	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o
7x	p	q	r	s	t	u	v	w	x	y	z	{	|	}	~	
8x																
9x																
Ax	*NBSP*	‘	’	£	€		¦	§	¨	©		«	¬	*SHY*		—
Bx	°	±	²	³	΄	΅	Ά	·	Έ	Ή	Ί	»	Ό	½	Ύ	Ώ
Cx	ΐ	Α	Β	Γ	Δ	Ε	Ζ	Η	Θ	Ι	Κ	Λ	Μ	Ν	Ξ	Ο
Dx	Π	Ρ		Σ	Τ	Υ	Φ	Χ	Ψ	Ω	Ϊ	Ϋ	ά	έ	ή	ί
Ex	ΰ	α	β	γ	δ	ε	ζ	η	θ	ι	κ	λ	μ	ν	ξ	ο
Fx	π	ρ	ς	σ	τ	υ	φ	χ	ψ	ω	ϊ	ϋ	ό	ύ	ώ	

6.6.8 ISO/IEC 8859-8

Latin/Hebrew

Covers the modern Hebrew alphabet as used in Israel. In practice two different encodings exist, logical order (needs to be BiDi processed for display) and visual (left-to-right) order (in effect, after bidi processing and line breaking).

ISO/IEC 8859-8																
	x0	x1	x2	x3	x4	x5	x6	x7	x8	x9	xA	xB	xC	xD	xE	xF
0x																
1x																
2x	*SP*	!	"	#	$	%	&	'	(	)	*	+	,	-	.	/
3x	0	1	2	3	4	5	6	7	8	9	:	;	<	=	>	?
4x	@	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
5x	P	Q	R	S	T	U	V	W	X	Y	Z	[	\	]	^	_
6x	`	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o
7x	p	q	r	s	t	u	v	w	x	y	z	{	|	}	~	
8x																
9x																
Ax	*NBSP*		¢	£	¤	¥	¦	§	¨	©	×	«	¬	*SHY*	®	¯
Bx	°	±	²	³	´	µ	¶	·	¸	¹	÷	»	¼	½	¾	
Cx																
Dx																‗
Ex	א	ב	ג	ד	ה	ו	ז	ח	ט	י	ך	כ	ל	ם	מ	ן
Fx	נ	ס	ע	ף	פ	ץ	צ	ק	ר	ש	ת			*LRM*	*RLM*	

6.6.9 ISO/IEC 8859-9

Latin-5 Turkish

Largely the same as ISO/IEC 8859-1, replacing the rarely used Icelandic letters with Turkish ones. It is also used for Kurdish.

位置	0xD0	0xDD	0xDE	0xF0	0xFD	0xFE
8859-9	Ğ	İ	Ş	ğ	ı	ş
8859-1	Ð	Ý	Þ	ð	ý	þ

In addition to Turkish and Kurdish outside, Albanian language, Basque language, Brittany language, Catalan language, Danish, Dutch, English, frith language, galician language, German, Greenland language, Ireland Gaelic (new orthography), Italian and Latin, Luxembourg, Norwegian,, Portuguese, in TuoLuo mance language, Scottish Gaelic, Swedish also can use this character set display.

ISO/IEC 8859-9															
	x0	**x1**	**x2**	**x3**	**x4**	**x5**	**x6**	**x7**	**x8**	**x9**	**xA**	**xB**	**xC**	**xD**	**xE**	**xF**
0x																
1x																
2x	*SP*	!	"	#	$	%	&	'	(	)	*	+	,	-	.	/
3x	0	1	2	3	4	5	6	7	8	9	:	;	<	=	>	?
4x	@	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
5x	P	Q	R	S	T	U	V	W	X	Y	Z	[	\	]	^	_
6x	`	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o
7x	p	q	r	s	t	u	v	w	x	y	z	{	|	}	~	
8x																
9x																
Ax	*NBSP*	¡	¢	£	¤	¥	¦	§	¨	©	ª	«	¬	*SHY*	®	¯
Bx	°	±	²	³	´	µ	¶	·	¸	¹	º	»	¼	½	¾	¿
Cx	À	Á	Â	Ã	Ä	Å	Æ	Ç	È	É	Ê	Ë	Ì	Í	Î	Ï
Dx	Ğ	Ñ	Ò	Ó	Ô	Õ	Ö	×	Ø	Ù	Ú	Û	Ü	İ	Ş	ß
Ex	à	á	â	ã	ä	å	æ	ç	è	é	ê	ë	ì	í	î	ï
Fx	ğ	ñ	ò	ó	ô	õ	ö	÷	ø	ù	ú	û	ü	ı	ş	ÿ

6.6.10 ISO/IEC 8859-10

Latin-6 Nordic

ISO 8859-10, the official Numbers for ISO/IEC 8859-10:1998, also called Latin-6 or Nordic，international organization for standardization Nordic, is within 'ISO/IEC for north Germanic branch of the Scandinavian) each language and set a 8 character set. That has brought the ISO/IEC 8859-10:1992 edition. It is designed to represent Danish, faroe language, Greenland language, Iceland, Norwegian, and Swedish language words.

This character set can support the following words at same time: English, Estonian, Finnish, German and Irish Gaelic (new orthography), Latin, Lithuanian, slovenian and part Sammy languages text.

ISO/IEC 8859-10																
	x0	x1	x2	x3	x4	x5	x6	x7	x8	x9	xA	xB	xC	xD	xE	xF
0x																
1x																
2x	SP	!	"	#	$	%	&	'	(	)	*	+	,	-	.	/
3x	0	1	2	3	4	5	6	7	8	9	:	;	<	=	>	?
4x	@	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
5x	P	Q	R	S	T	U	V	W	X	Y	Z	[	\	]	^	_
6x	`	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o
7x	p	q	r	s	t	u	v	w	x	y	z	{	|	}	~	
8x																
9x																
Ax	NBSP	Ą	Ē	Ģ	Ī	Ĩ	Ķ	§	Ļ	Đ	Š	Ŧ	Ž	SHY	Ū	Ŋ
Bx	°	ą	ē	ģ	ī	ĩ	ķ	·	ļ	đ	š	ŧ	ž	―	ū	ŋ
Cx	Ā	Á	Â	Ã	Ä	Å	Æ	Į	Č	É	Ę	Ë	Ė	Í	Î	Ï
Dx	Đ	Ņ	Ō	Ó	Ô	Õ	Ö	Ũ	Ø	Ų	Ú	Û	Ü	Ý	Þ	ß
Ex	ā	á	â	ã	ä	å	æ	į	č	é	ę	ë	ė	í	î	ï
Fx	ð	ņ	ō	ó	ô	õ	ö	ũ	ø	ų	ú	û	ü	ý	þ	ĸ

6.6.11 ISO/IEC 8859-11

ISO 8859-11, the official Numbers for ISO/IEC 8859-11:2001, international organization for standardization, is one of the 8 character set for Thai use.

This Character set industry standards TIS-620 from Thailand (English for "Standard for Thai Character Codes for Computers", Thai for **รหัสสำหรับอักขระไทยที่ใช้กับคอมพิวเตอร์**"). ISO/IEC 8859-11 fully absorb TIS-620 characters, within 0xA0 it will add "the line Spaces".

ISO/IEC 8859-11																
	x0	x1	x2	x3	x4	x5	x6	x7	x8	x9	xA	xB	xC	xD	xE	xF
0x																
1x																
2x	SP	!	"	#	$	%	&	'	(	)	*	+	,	-	.	/
3x	0	1	2	3	4	5	6	7	8	9	:	;	<	=	>	?
4x	@	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
5x	P	Q	R	S	T	U	V	W	X	Y	Z	[	\	]	^	_
6x	`	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o
7x	p	q	r	s	t	u	v	w	x	y	z	{	|	}	~	
8x																
9x																
Ax	NBSP	ก	ข	ฃ	ค	ฅ	ฆ	ง	จ	ฉ	ช	ซ	ฌ	ญ	ฎ	ฏ
Bx	ฐ	ฑ	ฒ	ณ	ด	ต	ถ	ท	ธ	น	บ	ป	ผ	ฝ	พ	ฟ
Cx	ภ	ม	ย	ร	ฤ	ล	ฦ	ว	ศ	ษ	ส	ห	ฬ	อ	ฮ	ฯ
Dx	ะ	ั	า	ำ	ิ	ี	ึ	ื	ุ	ู	ฺ					฿
Ex	เ	แ	โ	ใ	ไ	ๅ	ๆ	็	่	้	๊	๋	์	ํ	๎	๏
Fx	๐	๑	๒	๓	๔	๕	๖	๗	๘	๙	๚	๛				

6.6.12 ISO/IEC 8859-13

Official Numbers for ISO/IEC 8859-13:1998, also called "Latin - 7 or Baltic Rim, is within the international organization for standardization, ISO/IEC 8859 for each language puxi Baltic and set a 8 character set. It has joined ISO/IEC 8859-4 及 ISO/IEC 8859-10,for lack of letters and punctuation, which is used to denote Estonian, Finnish, latvian and Lithuania Chinese words.

This character set can support English, Portuguese and part of the Danish, German, slovenian and Sweden Chinese words at same time .

ISO/IEC 8859-13															
	x0	x1	x2	x3	x4	x5	x6	x7	x8	x9	xA	xB	xC	xD	xE	xF
0x																
1x																
2x	SP	!	"	#	$	%	&	'	(	)	*	+	,	-	.	/
3x	0	1	2	3	4	5	6	7	8	9	:	;	<	=	>	?
4x	@	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
5x	P	Q	R	S	T	U	V	W	X	Y	Z	[	\	]	^	_
6x	`	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o
7x	p	q	r	s	t	u	v	w	x	y	z	{	|	}	~	
8x																
9x																
Ax	NBSP	”	¢	£	¤	„	¦	§	Ø	©	Ŗ	«	¬	SHY	®	Æ
Bx	°	±	²	³	“	µ	¶	·	ø	¹	ŗ	»	¼	½	¾	æ
Cx	Ą	Į	Ā	Ć	Ä	Å	Ę	Ē	Č	É	Ź	Ė	Ģ	Ķ	Ī	Ļ
Dx	Š	Ń	Ņ	Ó	Ō	Õ	Ö	×	Ų	Ł	Ś	Ū	Ü	Ż	Ž	ß
Ex	ą	į	ā	ć	ä	å	ę	ē	č	é	ź	ė	ģ	ķ	ī	ļ
Fx	š	ń	ņ	ó	ō	õ	ö	÷	ų	ł	ś	ū	ü	ż	ž	’

ISO/IEC 8859-14

ISO 8859-14，Official Numbers for ISO/IEC 8859-14:1998,also called Latin - 8 or Celtic, within the international organization for standardization' ISO/IEC 8859 is one of the 8 character set. It is mainly used for Celtic puxi, including bulietani language, galician language, Ireland Gaelic (new orthography and old orthography), the isle of language, the welsh language, etc.

In addition, Albanian language, Basque language, Catalan language, Danish, English, German, Greenland language, Italian, Latin, Luxembourg, Norwegian,, Portuguese, in TuoLuo mance, Spanish, Swedish also can use this character set display.

ISO/IEC 8859-14															
	x0	x1	x2	x3	x4	x5	x6	x7	x8	x9	xA	xB	xC	xD	xE	xF
0x																
1x																
2x	*SP*	!	"	#	$	%	&	'	(	)	*	+	,	-	.	/
3x	0	1	2	3	4	5	6	7	8	9	:	;	<	=	>	?
4x	@	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
5x	P	Q	R	S	T	U	V	W	X	Y	Z	[	\	]	^	_
6x	`	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o
7x	p	q	r	s	t	u	v	w	x	y	z	{	|	}	~	
8x																
9x																
Ax	*NBSP*			£	Ċ	ċ		§	Ẁ	©	Ẃ		Ỳ	*SHY*	®	Ÿ
Bx			Ġ	ġ			¶		ẁ		ẃ		ỳ	Ẅ	ẅ	
Cx	À	Á	Â	Ã	Ä	Å	Æ	Ç	È	É	Ê	Ë	Ì	Í	Î	Ï
Dx	Ŵ	Ñ	Ò	Ó	Ô	Õ	Ö		Ø	Ù	Ú	Û	Ü	Ý	Ŷ	ß
Ex	à	á	â	ã	ä	å	æ	ç	è	é	ê	ë	ì	í	î	ï
Fx	ŵ	ñ	ò	ó	ô	õ	ö		ø	ù	ú	û	ü	ý	ŷ	ÿ

6.6.13 ISO/IEC 8859-15

Official Numbers for ISO/IEC 8859-15:1999, is also called Latin - 9, commonly called Latin - 0, within the international organization for standardization' I ISO/IEC 8859 is one of the 8 character set.

This character set in 1998, by joining in formulated ISO/IEC 8859-1 for lack of French OE 1 character set Ÿ letters letters and OE, and Finnish Š š , Ž ž . Meanwhile, it also replace ¤ (currency symbol) to € (euro symbol).

位置	0xA4	0xA6	0xA8	0xB4	0xB8	0xBC	0xBD	0xBE
8859-15	€	Š	š	Ž	ž	Œ	œ	Ÿ
8859-1	¤	¦	¨	´	¸	¼	½	¾

This character set can support the following words: Albanian language, Basque language, Brittany language, Catalan language, Danish, Dutch, English, Estonian, faroe language, Finnish, French, frith language, galician language, German, Greenland language, Iceland language, Ireland Gaelic (new orthography), Italian and Latin, Luxembourg, Norwegian,, Portuguese, in TuoLuo mance language, Scottish Gaelic, Spanish, Swedish.

ISO/IEC 8859-15															
	x0	x1	x2	x3	x4	x5	x6	x7	x8	x9	xA	xB	xC	xD	xE	xF
0x																
1x																
2x	SP	!	"	#	$	%	&	'	(	)	*	+	,	-	.	/
3x	0	1	2	3	4	5	6	7	8	9	:	;	<	=	>	?
4x	@	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
5x	P	Q	R	S	T	U	V	W	X	Y	Z	[	\	]	^	_
6x	`	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o
7x	p	q	r	s	t	u	v	w	x	y	z	{	|	}	~	
8x																
9x																
Ax	NBSP	¡	¢	£	€	¥	Š	§	š	©	ª	«	¬	SHY	®	¯
Bx	°	±	²	³	Ž	µ	¶	·	ž	¹	º	»	Œ	œ	Ÿ	¿
Cx	À	Á	Â	Ã	Ä	Å	Æ	Ç	È	É	Ê	Ë	Ì	Í	Î	Ï
Dx	Đ	Ñ	Ò	Ó	Ô	Õ	Ö	×	Ø	Ù	Ú	Û	Ü	Ý	Þ	ß
Ex	à	á	â	ã	ä	å	æ	ç	è	é	ê	ë	ì	í	î	ï
Fx	ð	ñ	ò	ó	ô	õ	ö	÷	ø	ù	ú	û	ü	ý	þ	ÿ

6.6.14 ISO/IEC 8859-16

the official Numbers for ISO/IEC 8859-16:2001, also called Latin - 10 or "southeastern Europe language," is formulated ISO/IEC 8859 a 8 character set by international organization for standardization in 2000

This character set designed to cover Albanian language, Croatia language, Hungarian, Italian, polish, romanian and slovenian etc from southeastern Europe language. Compared with other ISO/IEC 8859 character set characteristic, it is by removed symbols and space to accommodate letters as far as possible. Meanwhile, it also replace ¤ (currency symbol) to € (euro symbol). .

Romanian has the following four characters、 、 、 (s and add a comma below). Initially the four characters were replaced by unified yards Ș 、ș 、Ț 、ț (s and t, adding a cedill below) and romanian

replaced by using the I ISO/IEC 8859-2. But in Romania, it indicates they are comma not cedilla.

Finally unicode organizations including the four characters,

it is launched ISO/IEC 8859-16 by the international organization for standardization

for romanian and other southeastern Europe language use.

In addition to the above seven words, this character set can also support the following: English, Finnish, French, German, Ireland Gaelic (new orthography) and Latin.

ISO/IEC 8859-16															
	x0	x1	x2	x3	x4	x5	x6	x7	x8	x9	xA	xB	xC	xD	xE	xF
0x																
1x																
2x	*SP*	!	"	#	$	%	&	'	(	)	*	+	,	-	.	/
3x	0	1	2	3	4	5	6	7	8	9	:	;	<	=	>	?
4x	@	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
5x	P	Q	R	S	T	U	V	W	X	Y	Z	[	\	]	^	_
6x	`	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o
7x	p	q	r	s	t	u	v	w	x	y	z	{	|	}	~	
8x																
9x																
Ax	*NBSP*	Ą	ą	Ł	€	„	Š	§	š	©		«	Ź	*SHY*	ź	Ż
Bx	°	±	Č	ł	Ž	”	¶	·	ž	č		»	Œ	œ	Ÿ	ż
Cx	À	Á	Â	Ă	Ä	Ć	Æ	Ç	È	É	Ê	Ë	Ì	Í	Î	Ï
Dx	Đ	Ń	Ò	Ó	Ô	Ő	Ö	Ś	Ű	Ù	Ú	Û	Ü	Ę		ß
Ex	à	á	â	ă	ä	ć	æ	ç	è	é	ê	ë	ì	í	î	ï
Fx	đ	ń	ò	ó	ô	ő	ö	ś	ű	ù	ú	û	ü	ę		ÿ