



FLAT DISPLAY TECHNOLOGY CORPORATION

Smart Graphic Module

Graphic UART Commands



Smart Graphic Module

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2. Commands List

Commands Category	Command Code	Data Code	Explanation	Note
System Information	0x00	Address of Data + Data Length (read only)	Read System Information	Table 1 表一
	0x01	None	Show OSD Information	
System Clock (RTC)	0x20	Address of Data + Data Length (read only)	Read Clock	Table 2 表二
	0x21	Address of Data + Data Length + Data[n]	Set Clock	
Key	0x22	Address of Data + Data Length (read only)	Read key set status	Table 5 表五
	0x23	Address of Data + Data Length + Data[n]	Set key set Status	
Touch Screen Panel (TSP)	0x24	Address of Data + Data Length (read only)	Read Parameter of Touch	Table 6 表六
	0x25	Address of Data + Data Length + Data[n]	Set Parameter of Touch	
EEPROM	0x26	Address of Data + Data Length (read only)	Read EEPROM data	Table 3 表三
	0x27	Address of Data + Data Length + Data[n]	Write EEPROM data	
Screen parameter	0x28	Address of Data + Data Length (read only)	Read Color/Bright/Backlight data	Table 4 表四
	0x29	Address of Data + Data Length + Data[n]	Set Color/Bright/Backlight data	
User Interface	0x70	Key code 0 + Key code 1	Respond Key code	
	0x71	Touch event + Coordinate X + Coordinate Y	Respond Touch event 0x01 : press 0x00 ::release	
Stick Picture	0xA0	Picture number	Original coordinate from flash memory	
	0xA1	Coordinate X + Coordinate Y + Picture number	from flash memory	
	0xA4	Coordinate X + Coordinate Y + picture number	from flash memory	
	0xA5	Coordinate X + Coordinate Y + picture number + Transparent /sieve parameter	Transparent/Sieve Function from cache memory	
	0xA8	Coordinate X + Coordinate Y + picture number	Pictures from USB FLASH Drive	
	0xAA	Coordinate X + Coordinate Y + Number of animate + Period + animate style + picture number	Animate from cache memory	
	0xAC	Coordinate X + Coordinate Y + font library number + Length of Character + Character [n]	Text / Digit	
User Information	0xD0	Coordinate X + Coordinate Y + color + word length+ ASCII code [n]	Show character for tentative	
Other function	0xFB	Buzzer Sound period	Start Buzzer	
	0xFE	None	Update flash memory by USB FLASH Drive	



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3. Communication Specification

3.1 Communication Format

115200 – N – 8 – 1

115200 bps : 115200 Bits/Second

N: Parity Checking (None)

8: Data is 8 Bits

1: one stop bit

Data Format						
Name	Start Code	Length Code	Length Checking Code	Command and Data code	Checksum	Stop code
(Byte)	1	1	1	n (1~21Bytes)	1	1
Sending Format	0xF1	0x06	0xF7	0x20 0x00 0x07	0x1E	0xF4
Respond Format	0xF2	0x0D	0xFF	0x20 0x00 0x07 0x00...	0x45	0xF8

3.2 Data Format

Note: Data format length range 6~26 Bytes

※ Start Code: First byte value is fixed

Exp. 0xF1 send

0xF2 response

※ Data Length Code: Total Bytes of from Length Checking Code to Stop Code

Exp. 0x06 : 0xF7 0x20 0x00 0x07 0x1E 0xF4

0x0D : 0xFF 0x20 0x00 0x07 0x00 0x32 0x23 0x10 0x12 0x08 0x03 0xA8 0xF8

※ Length Checking Code: Start code + data length code

Exp. 0xF1 + 0x06 = 0xF7

0xF2 + 0x0D = 0xFF

※ Command and Data code: 0x20 0x00 0x07

Command code

Exp. 0x20

Address of Data

Exp. 0x00

Total Bytes to send/respond

Exp. 0x07

Send/Respond Data

Exp. 0x00 0x32 0x23 0x10 0x12 0x08 0x03

※ Checksum : Sum from Length Checking Code to Last Data (get low byte)

Exp. 0xF7 + 0x20 + 0x00 + 0x07 = 0x04 0x1E



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$0xFF + 0x20 + 0x00 + 0x07 + 0x00 + 0x32 + 0x23 + 0x10 + 0x12 + 0x08 + 0x03 = 0x010xA8$

※ Stop Code: Last Byte, the value is fixed

Exp. $0xF4$ Send

$0xF8$ response

Example: RTC Send and Response

Send $0xF1\ 0x06\ 0xF7\ 0x20\ 0x00\ 0x07\ 0x1E\ 0xF4$

Respond $0xF2\ 0x0D\ 0xFF\ 0x20\ 0x00\ 0x07\ 0x00\ 0x32\ 0x23\ 0x10\ 0x12\ 0x08\ 0x03\ 0xA8\ 0xF8$

4. Commands Explanation

4.1 System Information

■ System Information

Command:

Command Code	Address of data	Data length
$0x00$	$0x10$	$0x04$

※ Command Code: $0x00$ means reading resolution of TFT-LCD panel

※ Address of data: from $0x10$, $0x10\sim 0x11$ Horizontal Pixels, $0x12\sim 0x13$ Vertical Pixels

※ Data Length: $0x04$ is 4

Table 1 : System Information

Reg.Adr.	Type	Name	Byte	Initial Value	
0x00h	Version ID	Reserved			
0x01h		Reserved			
0x02h		Reserved			
0x03h		Reserved			
0x04h		Reserved			
0x05h		Reserved			
0x06h		Reserved			
0x07h		Reserved			
0x08h		Reserved			
0x09h		Reserved			
0x0Ah		Reserved			
0x0Bh		Reserved			
0x0Ch		Reserved			
0x0Dh		Reserved			
0x0Eh		Reserved			
0x0Fh		Reserved			
0x10h	Panel	Size XH	1	0x03	High Byte
0x11h	Horizontal Pixels	Size XL	1	0x20	Low Byte



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0x12h	Panel	Size YH	1	0x02	High Byte
0x13h	Vertical Pixels	Size YL	1	0x58	Low Byte

Response:

Horizontal Pixels		Vertical Pixels	
0x03	0x20	0x02	0x58

Example:

Send 0xF1 0x06 0xF7 0x00 0x10 0x04 0x0B 0xF4
 Respond 0xF2 0x0A 0xFC 0x00 0x10 0x04 0x03 0x20 0x02 0x58 0x8D 0xF8

Smart Graphic Module Information

Command:

Command Code
0x01

※ Command: 0x01 is to show Smart Graphic Module information on the screen; send other command Information window will close.

Example :

Send 0xF1 0x04 0xF5 0x01 0xF6 0xF4

4.2 RTC (Real Time Clock)

※ Accuracy of clock is by second from system, not applicable for less than one second

System Clock

Command :

command Code	Address of Data	Data length
0x20	0x00	0x07

※ Clock set data refer to Table 2.

Table 2 : System Clock (RTC)

Reg.Adr.	Type	Name	Byte	
0x00h	Time/Date	Sec.	1	BCD 00~59
0x01h		Min.	1	BCD 00~59
0x02h		Hour	1	BCD 00~23
0x03h		Day	1	BCD 01~31



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0x04h		Month	1	BCD 01~12								
0x05h		Year	1	BCD 00~99								
0x06h		Day of Week	1	BCD 0~6 (0 is Sunday ; 1 is Mondayand so on)								
0x07h	Clock Display Mode	Clock Display Mode	1	Bit 7	On/Off	1: display on 0: display off						
				0: 12 Hour 1: 24 Hour	Format 1	Sec/min/hr/date/mon/year/week						
					Format 2	Date/mon/year/week Hr/min/sec (AM/PM)	※ character height must below 40 Pixels otherwise overlap will occur					
					Format 3	Year/mon/date/week Hr/min/sec (AM/PM)						
Display parameter (Reg.0x20h~ 0x3Fh)												
0x08h	Clock Mode	Reserved	1									
0x09h		Reserved	1									
0x0Ah		Alarm Mode	1	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0	
				Alarm on/off	Time's up auto-boot	Time's up auto-shut down	On/off Message	1:Alarm Mode 0:Countdown Mode	-	-	-	
0x0Bh	Alarm Match Item	1	1: Repeat 0: Single	-	Week	Month	Date	HR	Min	-		
0x0Ch	Alarm Data Set	Sec.	1	BCD 00~59								
0x0Dh		Min	1	BCD 00~59								
0x0Eh		Hour	1	BCD 00~23								
0x0Fh		Day	1	BCD 01~31								
0x10h		Month	1	BCD 01~12								
0x11h		Day of Week	1	BCD 0~6 (0 is Sunday ; 1 is Monday and so on)								
0x12h	Message	Mode	1	0x00 (define by user) set on/off by 0x0A bit 4								
0x13h		Key Word	1	0x00 (define by user)								
0x20h	Clock display position	Horizontal position	2	0~1023								
0x21h				Vertical position	2	0~1023						
0x22h		Character Library	Character Library Number			1	Default: Typ0 ; Library selected by user must comply with ASCII code rule					
0x23h												



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Respond:

Second	Minute	Hour	Date	Mon	Year	Week
0x00	0x32	0x23	0x10	0x12	0x08	0x03

※ Seconds, minutes, hours, dates, months, year and weeks are defined as BCD code in Smart Graphic Module processor

Example: 0x32 = BCD 32 do not equal the 50 in Decimal

BCD is to use one byte separate the high 4 bits for decimal, the low 4 bits store unit.

Example : Read current second, minute, hour, day, month, year, week, ? (Example: 23:32:00,Dec 10, 2008, Wednesday)

Send 0xF1 0x06 0xF7 0x20 0x00 0x07 0x1E 0xF4

Respond 0xF2 0x0D 0xFF 0x20 0x00 0x07 0x00 0x32 0x23 0x10 0x12 0x08 0x03 0xA8 0xF8

■ Read Alarm clock**Command:**

Command Code	Address of Data	Data length
0x20	0x0D	0x04

※ Parameter Address refer to Table 2

Response:

Min	Hour	Date	Mon
0x30	0x08	0x03	0x09

Example: Read current minute, hour, date, month, (Exp: 23:32,Dec 10)

Send 0xF1 0x06 0xF7 0x20 0x0D 0x04 0x28 0xF4

Respond 0xF2 0x0A 0xFC 0x20 0x0D 0x04 0x30 0x08 0x03 0x09 0x71 0xF8

■ Set system clock**Command:**

Command Code	Address of Data	Data length	Min	Hour	Date	Mon	Year	Week
0x21	0x01	0x06	0x00	0x08	0x03	0x09	0x09	0x03

※ Address of data refer to Table 2

Example: Set clock "2009/09/03 08:00 Wed"

Send: 0xF1 0x0C 0xFD 0x21 0x01 0x06 0x00 0x08 0x03 0x09 0x09 0x03 0x45 0xF4



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■ Set character and location for clock display

Command :

Command Code	Address of Data	Data length	Coordinate X		Coordinate Y		Character Library number
0x21	0x20	0x05	0x01	0xF0	0x01	0x60	0x00

※ Address of data refer to Table 2

Example : Set coordinate of clock display set (496, 352) , character library Typ 0

Send: 0xF1 0x0B 0xFC 0x21 0x20 0x05 0x01 0xF0 0x01 0x60 0x00 0x94 0xF4

■ Set clock display format

Command:

Command Code	Address of Data	Set Data length	Clock Format
0x21	0x07	0x01	0x02

※ Address of data refer to Table 2

Example: Set format 2 as time display

Send: 0xF1 0x0C 0xFD 0x21 0x01 0x06 0x00 0x08 0x03 0x09 0x09 0x03 0x45 0xF4 set clock

0xF1 0x0B 0xFC 0x21 0x20 0x05 0x01 0xF0 0x01 0x60 0x00 0x94 0xF4 set format and location of clock

0xF1 0x07 0xF8 0x21 0x07 0x01 0x02 0x23 0xF4

Display:

03/09/2009 Wed 08:00:00 AM

■ Set Alarm

Example : Set "09/03 08:30"

Command :

Command Code	Address of Data	Data length	Set Alarm Mode	Alarm match item
0x21	0x0A	0x02	0x98	0x1E

Command Code	Address of Data	Data length	Min	Hour	Date	Mon
0x21	0x0D	0x04	0x30	0x08	0x03	0x09

※ Address of data refer to Table 2

Example : Send 0xF1 0x08 0xF9 0x21 0x0A 0x02 0x98 0x1E 0xDC 0xF4

0xF1 0x0A 0xFB 0x21 0x0D 0x04 0x30 0x08 0x03 0x09 0x71 0xF4

After complete above steps Alarm will ring at "09/03 08:30"



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■ Advanced Alarm Set

Example : Time to boot / Respond on / Alarm Mode Respond every 30 minutes **0x01** **0xAC**

1. Respond information set

Command Code	Address of Data	Data length	message default by user
0x21	0x12	0x02	0x01 0xAC

※ Address of data refer to Table 2

2. Set Alarm Mode and match item

Command Code	Address of Data	Data length	Set Alarm Mode	Alarm match item
0x21	0x0A	0x02	0xD8	0x82

Alarm mode(0xD8) : Alarm on / Auto-boot / message on /alarm

Alarm match item (0x82) : alarm repeat / minute

3. Set every 30 minutes alarm

Command Code	Address of Data	Data length	Data
0x21	0x0D	0x01	0x30

Example : Send **0xF1** **0x08** **0xF9** **0x21** **0x12** **0x02** **0x01** **0xAC** **0xDB** **0xF4**
0xF1 **0x08** **0xF9** **0x21** **0x0A** **0x02** **0xD8** **0x82** **0x80** **0xF4**
0xF1 **0x07** **0xF8** **0x21** **0x0D** **0x01** **0x30** **0x57** **0xF4**

After complete above steps will Respond message on every 30 minutes

0xF2 **0x08** **0xFA** **0x20** **0x12** **0x02** **0x01** **0xAC** **0xDB** **0xF8**

4.3 EEPROM

※ Use as normal EEPROM, to recognize labeled customers record saving space total 32 Bytes

■ Read EEPROM data

Example : read the 3 address after 0x03h ◦

Command :

Command Code	Address of Data	Data length
0x26	0x03	0x03

Table 3 : EEPROM

Parameter Address	Type	Name	Byte	
0x00h			1	0xFF
0x01h			1	0xFF
0x02h ~ 0x1Dh			1~1	0xFF
0x1Eh			1	0xFF
0x1Fh			1	0xFF



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Respond :

0x26 0x03 0x03 0x5F 0x54 0x65

Example: Send 0xF1 0x05 0xF6 0x26 0x03 0x03 0x22 0xF4

Respond 0xF2 0x09 0xFB 0x26 0x03 0x03 0x5F 0x54 0x65 0x3F 0xF8

■ Write EEPROM data

Example :

Write from 00h to 0x07h Save to "FDT_Test" , FDT_Test" Transfer to ASCII 0x46 0x44 0x54 0x5F 0x54 0x65 0x73 0x74

Command :

Command Code	Address of Data	Data length	F	D	T	_	T	e	s	t
0x27	0x00	0x07	0x46	0x44	0x54	0x5F	0x54	0x65	0x73	0x74

※ Address of data refer to Table 3

Example : Send 0xF1 0x0F 0x00 0x27 0x00 0x07 0x46 0x44 0x54 0x5F 0x54 0x65 0x73 0x74 0x0B 0xF4

4.4 Screen Parameter

■ Read Screen parameter

Example : Read brightness

Command :

Command Code	Address of Data	Data length
0x28	0x01	0x01

Table 4 : Screen Parameter

Reg.Adr.	Type	Name	Byte	Initial Value	
0x00h	Initial	Reset	1	0	> 0 Reset
0x01h	Picture	Brightness	1	16	0~31
0x02h		Saturation	1	16	0~31
0x03h	Mirror	Vertical	1	0x00	
0x04h		Horizontal	1	0x00	
0x05h	Backlight	Dimming	1	9	9~0
0x06h		On/Off	1	0x01	
0x07h	Power on/off	On/Off	1	0	1: Power Off 0: Power On



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Respond :

0x28 0x01 0x01 0x10

Example: Send 0xF1 0x05 0xF6 0x28 0x01 0x01 0x20 0xF4

Respond 0xF2 0x07 0xF9 0x28 0x01 0x01 0x10 0x33 0xF8

■ Set Screen parameter

Command :

Command Code	Address of Data	Data length	Brightness	Saturation
0x29	0x01	0x02	0x10	0x10

※ Address of data refer to Table 4

Example : Set brightness and Saturation as 16

Send 0xF1 0x08 0xF9 0x29 0x01 0x02 0x10 0x10 0x45 0xF4

4.5 Stick Picture function

※ Easy graphic arranger offer Uart command transmitting function.

■ Stick Background Picture (Full Screen Picture)

Command :

Command Code	Picture number	
0xA0	0x00	0x04

※ **Command Code:** 0xA0 means picture is extracted from flash memory , and stick background picture at origin coordinate(0,0).

※ **Picture Number:** 0x00 0x04 means picture number is 4.

Example :

Send: 0xF1 0x06 0xF7 0xA0 0x00 0x04 0x9B 0xF4

■ Stick Picture (Flash memory area)

Command :

Command Code	X Coordinate		Y Coordinate		Picture Number	
0xA1	0x01	0x48	0x01	0xC8	0x00	0x01

※ **Command Code:** 0xA1 stick pictures from flash Memory

※ **X Coordinate:** 0x01 0x48 means X coordinate is 328 ; (Range : 0 ~ 799 but depends panel resolution) ;
Value must be 8*n value.

※ **Y Coordinate:** 0x01 0xC8 means Y coordinate is 456 ; (Range : 0 ~ 599 but depends panel resolution) ;
Value must be 8*n value

※ **Picture Number:** 0x00 0x01 means picture number is 1



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Example :

Send: 0xF1 0x08 0xF9 0xA1 0x01 0x48 0x01 0xC8 0x00 0x01 0xAD 0xF4

■ Stick Picture (Cache memory area)

Command :

Command Code	Coordinate X		Coordinate Y		Picture Number	
0xA4	0x01	0x48	0x01	0xC8	0x00	0x1C

※ **Command Code:** 0xA4 means picture extracted from Cache memory

※ **X Coordinate:** 0x01 0x48 X coordinate is 328 ; (Range : 0 ~ 799 but depends panel resolution) ;
value must be 8*n value

※ **Y Coordinate:** 0x01 0xC8 Y coordinate is 456 ; (Range : 0 ~ 599 but depends panel resolution) ;
value must be 8*n value

※ **Picture Number :** 0x00 0x1C picture number is 28.(Range : 0 ~ 4095)

Example :

Send: 0xF1 0x0A 0xFB 0xA4 0x01 0x48 0x01 0xC8 0x00 0x1C 0xCD 0xF4

■ Stick Picture with transparent/sieve parameter (Cache memory area)

command:

Command Code	Coordinate X		Coordinate Y		Picture Number		Transparent	Sieve
0xA5	0x01	0x48	0x01	0xC8	0x00	0x1C	0x09	0x02

※ **Command Code:** 0xA5 means picture is read from Cache memory , also sticked Transparent & Sieve

※ **X Coordinate:** 0x01 0x48 means X coordinate is 328.(Range : 0 ~ 799 but depends panel resolution) ;
value must be 8*n value.

※ **Y Coordinate:** 0x01 0xC8 means Y coordinate is 456.(Range : 0 ~ 599 but depends panel resolution) ;
value must be 8*n value.

※ **Picture Number:** 0x00 0x1C means picture number is 28.(Range : 0 ~ 4095)

※ **Transparent :** 0x09 picture transparent 9 , (Range : Min.0 ~Max.15) , the bigger value set on transparent of front picture view,the clearer the background

※ **Sieve :** 0x02 picture sieve effect 2 , Sieve will filter out the darker area of front picture view in order to let background clearly presented. (Range : Min.0 ~Max.15)

Example :

Send: 0xF1 0x0C 0xFD 0xA4 0x01 0x48 0x01 0xC8 0x00 0x1C 0x09 0x02 0xDA 0xF4

■ Stick Picture (USB Flash Drive)

※ **Download picture resolution must be less or equal to panel resolution**

Command :

Command Code	Coordinate X		Coordinate Y		Picture Number	
0xA8	0x01	0x48	0x01	0xC8	0x00	0x1C

※ **Command Code:** 0xA8 means picture was read from USB Flash Drive



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※ **Coordinate X:** `0x01 0x48` means X coordinate is 328. (Range : 0 ~ 799 but depends panel resolution) ;

Value must be 8*n value

※ **Coordinate Y:** `0x01 0xC8` means Y coordinate is 456.(Range : 0 ~ 599 depends panel resolution) ;

value must be 8*n value

※ **Picture Number:** `0x00 0x1C` means picture number is FJI_U028 ; picture file name in USB must be applied the naming rule 「FJI_U[xxx]」 ; (Range : FJI_U000 ~ FJI_U999)

■ Stick dynamic pictures

Command :

Command Code	Coordinate X		Coordinate Y		PID	Period	Dynamics and quantity	Picture Number	
<code>0xAA</code>	<code>0x01</code>	<code>0xF0</code>	<code>0x01</code>	<code>0x50</code>	<code>0x00</code>	<code>0x86</code>	<code>0xC5</code>	<code>0x00</code>	<code>0x01</code>

※ **Command Code** `0xAA` : dynamic pictures (animation)

※ **X Coordinate:** `0x01 0xF0` stick picture coordinate location is 496.(Range 0~799 but depends panel resolution) ; must apply 8*n value to stick picture

※ **Y coordinate:** `0x01 0x50` stick picture coordinate location is 336.(Range : 0 ~ 599 but depends panel resolution) ; Must apply 8*n value to stick picture

※ **PID (Dynamic Picture ID):** can define range 0~3 , therefore maximum 4 dynamic pictures can be existing in same background picture.

※ **Period :**

Binary 「Bit 7」 : interval time unit 「1」 : 1Sec 「0」 : 50mSec

Binary 「Bit 6~0」 : intervals times (Range : 0 ~ 128) ◦

Attention!! Cannot control time accurately, depends on the system load ◦

※ **Dynamics and quantity :**

Binary 「Bit 7」 : 「1」 : sequence mode, Picture number is series, refer 「Bit 5~0」 (Range : 1 ~ 63)

「0」 : order mode, Which pictures order for dynamics , refer 「Bit 1~0」 (Range : 1 ~ 4) ◦

Binary 「Bit 6」 : 「1」 : repeat mode 「0」 : None 1: Repeat ◦

Binary 「Bit 5~0」 :

※ **Picture number :** dynamics and quantity _ bit 7 : 1 (sequence mode)

> **Picture number : 0x00 0x03 (only start picture number, how many pictures by Bit 5~0)**

dynamics and quantity _ bit 7 : 0 (order mode)

dynamics and quantity _ bit 1~0 : 10 (3 pictures)

>**Picture number : 0x00 0x03 0x00 0x10 0x00 0x1A (order 3 picture number)**

Example :

Send: `0xF1 0x0C 0xFD 0xAA 0x01 0xF0 0x01 0x50 0x00 0x86 0xC5 0x00 0x01 0x35 0xF4`



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■ Stick digits or characters

Command :

Command Code	Coordinate X		Coordinate Y		Library number	Data length	T	e	s	t
0xAC	0x01	0x80	0x00	0x10	0x00	0x04	0x54	0x65	0x73	0x74

Example : character "Test"

0xF1 0x0E 0xFF 0xAC 0x01 0x80 0x00 0x10 0x00 0x04 0x54 0x65 0x73 0x74 0xE0 0xF4

4.6 User information display

Command :

Command Code	Coordinate X	Coordinate Y	Color Index	Data length	G	r	a	p	h	i	c
0xD0	0x01	0x02	0x01	0x07	0x47	0x72	0x61	0x70	0x68	0x69	0x63

data	bytes	Note			
Coordinate X	1	0~38			
Coordinate Y	1	0~12			
Color Index	1	bit5 : 0 None 1 Flash	bit4 : 0 None 1 Board	Bit3~0: 0~15 color	
Data length	1	1~16 character			
Data	1~16	ASCII code Use SGM built-in FONT			

Example : show "Graphic" on the screen , total 7 character , coordinate (1,2), white color

Send :

0xF1 0x0F 0x00 0xD0 0x01 0x02 0x01 0x07 0x47 0x72 0x61 0x70 0x68 0x69 0x63 0x99 0xF4

4.7 Other Function

■ Set Buzzer

Command :

Command Code	sound Buzzer Times (each unit of 10mSec)
0xFB	0x04

※Set Buzzer sound

0x00 = always OFF

0x01 ~ 0xFE = Unit *10mSec

0xFF = always ON

Example : Set buzzer call time 40 mSec ◦

Send: 0xF1 0x05 0xF6 0xFB 0x04 0xF5 0xF4



Smart Graphic Module

■ Update picture Library

Command Code
0xFE

Example :

Send: 0xF1 0x04 0xF5 0xFE 0xF3 0xF4

4.8 Key function

**This function is optional for hardware*

Quantity of key refer to program version or through command 0x01 checking quantity of key , this set value will respond key code thru 0x70, follow the published version of the program to set the order of Key , respond value of Key refer to figure of EEPROM , this command is to set these respond values , each key code have 2 bytes.

Example :

Build-in 9 Key :

Set Key0 0x01 0x30 ; Set Key1 0x01 0x31 ; Set Key2 0x01 0x32 ; Set Key3 0x01 0x33 ,
 Set Key4 0x01 0x34 ; Set Key5 0x01 0x35 ; Set Key6 0x01 0x36 ; Set Key7 0x01 0x37 ,
 Set Key8 0x01 0x38 ; set Key9 0x01 0x39 .

■ Set Key status

Command :

Command Code	Address of Data	Data length	Key0 ~ Key7 Key code[n]
0x23	0x00	0x14	0x01 0x30 0x01 0x31 0x01 0x32 0x01 0x33 0x01 0x34 0x01 0x35 0x01 0x36

Table 5 : Key respond Parameter

Address	Type	Name	Byte	Default
0x00h	Key0	Key Code 0	1	0x00
0x01h		Key Code 1	1	0x00
0x02h ~ 0x39h	Key1 ~ Key 31	Key Code 0	1	0x00
		Key Code 1	1	0x00
0x40h	Key32	Key Code 0	1	0x00
0x41h		Key Code 1	1	0x00

Example : Send

0xF1 0x14 0x05 0x23 0x00 0x14 0x01 0x30 0x01 0x31 0x01 0x32 0x01 0x33 0x01 0x34 0x01 0x35 0x01 0x36 0xA8 0xF4

After set will save to EEPROM .



Smart Graphic Module

■ Read Key status

Command :

Command Code	Address of Data	Data length
0x22	0x00	0x14

Respond :

0x22 0x00 0x14 0x01 0x30 0x01 0x31 0x01 0x32 0x01 0x33 0x01 0x34 0x01 0x35 0x01

Exp: Send 0xF1 0x06 0xF7 0x22 0x00 0x14 0x2D 0xF4

Respond 0xF2 0x14 0x05 0x22 0x00 0x14 0x01 0x30 0x01 0x31 0x01 0x32 0x01 0x33 0x01 0x34 0x01 0x35 0x01
0x36 0xA8 0xF8

4.9 TSP

■ Read parameter of touch function

Command Code	Address of Data	Data length
0x24	0x00	0x01

■ Set parameter of touch function

Command Code	Address of Data	Data length	data
0x25	0x00	0x01	0x01

Table 6 : Touch Parameter

Address	Type	Name	Byte		Initial unofficial value
0x00h	Start TSP calibrate	Touch calibrate	1	1:Enable calibrate : Respond Calibrate Direct 0:Disable calibrate: Respond original Direct (0->1: Startup Calibrate)	0
0x01h	Origin point set	Quadrant	1	00: origin point up left 01.origin point up right 02: origin point down left 03: origin down left	Don't care

Start calibrate

When parameter 0x00h is 0 , send 0x25 0x00 0x01 0x01 will start calibrate process, after complete calibration will return to the first picture(LOGO).

Example :

Send 0xF1 0x06 0xF7 0x24 0x00 0x01 0x1C 0xF4 read calibration status

Respond 0xF2 0x07 0xF9 0x24 0x00 0x01 0x00 0x1E 0xF8 no calibration (* if OK can't calibrate)

Send 0xF1 0x07 0xF8 0x25 0x00 0x01 0x01 0x1C 0xF4 write enable and start calibration



Smart Graphic Module

Origin point set

Example :

Send `0xF1` `0x07` `0xF8` `0x25` `0x01` `0x01` `0x01` `0x20` `0xF4` origin point at up right

4.10 User interface Response

※ Only with buttons or touch screen panel can return information

■ Press key response

Respond : `0x70` `key code 0` `key code 1`

Example :

Press key 0 → 3 → 1 → 2 will respond sequentially

key 0 respond: `0xF2` `0x06` `0xF8` `0x70` `0x01` `0x30` `0x99` `0xF8`

key 3 respond: `0xF2` `0x06` `0xF8` `0x70` `0x01` `0x33` `0x9C` `0xF8`

key 1 respond: `0xF2` `0x06` `0xF8` `0x70` `0x01` `0x31` `0x9A` `0xF8`

key 2 respond: `0xF2` `0x06` `0xF8` `0x70` `0x01` `0x32` `0x9B` `0xF8`

■ Touch function response

Respond: `0x71` `touch event` `Coordinate X` `Coordinate Y`

Touch event `0x00` Release

`0x01` Press

TSP Press event Respond : `0xF2` `0x09` `0xFB` `0x71` `0x01` `0x01` `0x0F` `0x01` `0x2C` `0xAA` `0xF8`

TSP Release event Respond : `0xF2` `0x09` `0xFB` `0x71` `0x00` `0x01` `0x0D` `0x01` `0x2C` `0xA7` `0xF8`