CheFree Technology Inc.

齊飛科技股份有限公司

PRODUCT   SPECIFICATIONS

產 品 規 範 書

Customer (客戶)： _____

Model (型式)：

Mode (種類)： Projective Capacitive type

Date (日期)： ÙÒÚ €Î , 201G

Version (版本)： 0G0€01

Customer Approval 客 戶 簽 認
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Approve 確認	Review 審訂	Preparation 製表

2. RECORD OF REVISION

Rev	Date	Item	Page	Comment
1	23/Nov./11'			Initial preliminary
2	06/SEP/12'	3 10 12 14 15	3 19 22 25 26	1. Add Weight. 2. Modify QUALITY ASSURANCE. 3. Modify label size. 4. Modify OUTLINE DRAWING from Rev.1 to Rev.2. 5. Add PACKAGE INFORMATION.

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3. GENERAL SPECIFICATIONS

Item	Specification	Unit
Type	Transparent type projected capacitive touch panel	
Input mode	Human's finger	
Substrate Thickness	0.5	mm
Outline Dimension	115.1(H) x 73.9(V)	mm
Weight	24	g
Transparency	$\geqq 85$	%
Haze	$\leqq 1.0$	%

4. ELECTRICAL CHARACTERISTICS

4.1 Absolute Maximum Ratings

Parameter	Symbol	Spec.			Unit
		Min.	Typ.	Max.	
Supply voltage	Vcc	-0.3	-	7	V
Switch control signals output current	Output current	-	50	-	mA
Enable control voltage range	Logic Input	-0.3	-	Vcc+0.3	V
Output Control Driver	Output voltage	-0.3	-	Vcc	V

4.2 DC characteristics

Item	Symbol	Spec.			Unit
		Min.	Typ.	Max.	
Supply voltage	Vcc	2.5	3.3	3.5	
Input high voltage	V_{IH}	0.7 * VCC	-	VCC	V
Input low voltage	V_{IL}	0	-	0.3 *VCC	V

5. PIN CONNECTIONS

No.	Name	I/O	Description
1	VCC	P	Power; VCC=3.3V
2	/RES	I	Active low global reset.
3	/INT	O	Active low when data output from touch panel
4	SDA	I/O	Serial data access
5	SCL	I	Clock; 100KHz
6	VSS	P	Ground

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6. AC CHARACTERISTICS
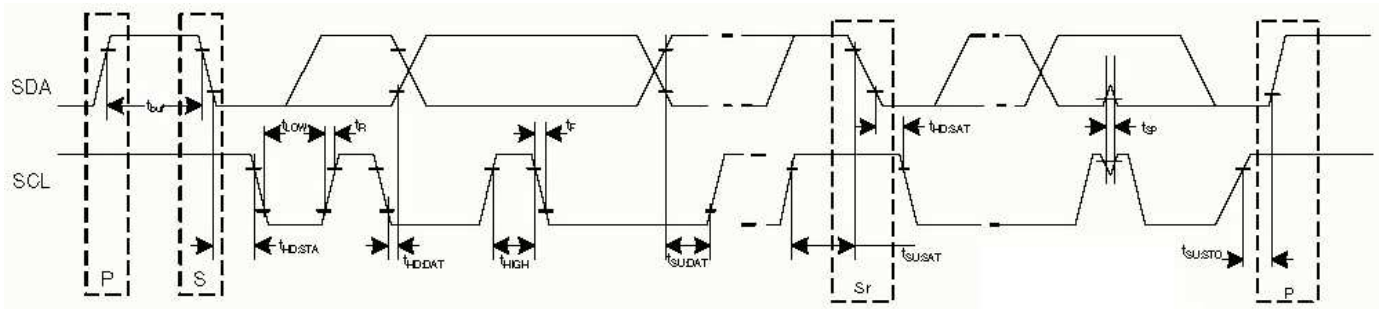
Figure 6.1: I²C timing

Parameter	Symbol	Standard-Mode		Fast-Mode		Unit
		Max.	Min.	Max.	Min.	
SCL clock frequency	f_{SCL}	0	100	0	400	KHz
Bus free time between STOP and START condition	t_{BUF}	4.7	-	1.3	-	μs
Hold time (repeated) START condition. After this period, the first clock pulse is generated	$t_{HD:STA}$	4.0	-	0.6	-	μs
LOW period of the SCL clock	t_{LOW}	4.7	-	1.3	-	μs
HIGH period of the SCL clock	t_{HIGH}	4.0	-	0.6	-	μs
Set-up time for a repeated START condition	$t_{SU:STA}$	4.7	-	0.6	-	μs
Data hold time	$t_{HD:DAT}$	0	-	0	0.9	μs
Data set-up time	$t_{SU:DAT}$	250	-	100	-	ns
Rise time of both SDA and SCL signals	t_R	-	1000	20+0.1 $_bC$	300	ns
Fall time of both SDA and SCL signals	t_F	-	300	20+0.1 $_bC$	300	ns
Set-up time for STOP condition	$t_{SU:STO}$	4.0	-	0.6	-	μs

Note:

(1) All values are referred to VIH (0.7xVCC) and VIL (0.3xVCC) level.

(2) A device must internally provide a hold time of at least 300ns for the SDA signal (referred to the VIH of the SCL signal) in order to bridge the undefined region of the falling edge of SCL.

(3) The maximum $t_{HD:DAT}$ has only to be met if the device does not stretch the LOW period (t_{LOW}) of the SCL signal.

(4) A fast-mode I²C-bus device can be used in a standard-mode I²C-bus system, but the requirement $t_{SU:DAT} \geq 250$ns must then be met. This will automatically be the case if the device does not stretch the LOW period of the SCL signal. If such a device does stretch the LOW period of the SCL signal, it must output the next data bit to the SDA line t_R max $+ t_{SU:DAT} = 1000+250=1250$ns (according to the standard-mode I²C-bus specification) before the SCL line is released.

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7. CTP INTERFACE AND DATA FORMAT

7.1 Transfer protocol (I²Cinterface)

ÔØ∈ｌ Ҥ∈Ҥõ support I²C interface that need 2 hardware pin – serial data (SDA) and serial clock (SCL), carry information between the devices connected to the bus. The I²C bus supports serial, 8-bit oriented, bi-directional data transferred at a rate up to 100Kbit/s in the standard-mode, or up to 400Kbit/s in the fast-mode.

The data on the SDA line must be stable during the HIGH period of the clock. The HIGH or LOW state of the data line can only change when the clock signal on the SCL line is LOW.
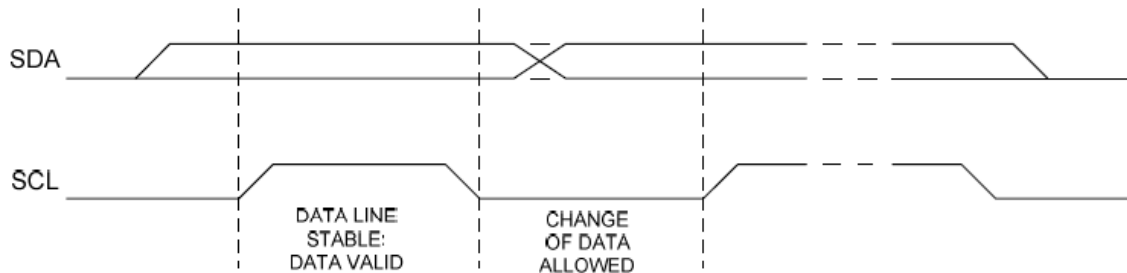
Figure 7.1: I²C Signal timing

Within the procedure of the I²C -bus, unique situations arise which are defined as START and STOP conditions. A HIGH to LOW transition on the SDA line while SCL is HIGH is one such unique case. This situation indicates a START condition. A LOW to HIGH transition on the SDA line while SCL is HIGH defines a STOP condition. START and STOP conditions are always generated by the master. The I²C bus is considered to be busy after the START condition. The I²C bus is considered to be free again a certain time after the STOP condition.
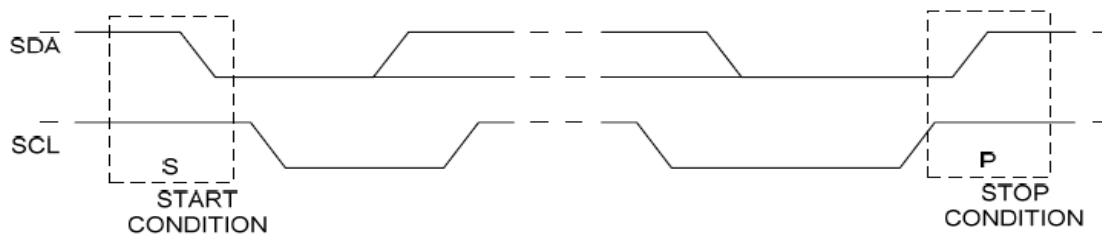
Figure 7.2: I²C Start/Stop

7.2 I²C data transfer

The CTP ÔØ∈ｌ Ҥ∈Ҥõ **I²C address** is **94H**

Each byte has to be followed by an acknowledge bit. Data is transferred with the most significant bit (MSB) first. Every byte put on the SDA line must be 8-bits long. The number of bytes that can be transmitted per transfer is unrestricted. If controller can't receive or transmit another complete byte of data until it has performed some other function, for example servicing an internal interrupt, it can hold the clock line SCL LOW to force the master into await state. Data transfer then continues when the controller is ready for another byte of data and releases clock line SCL.

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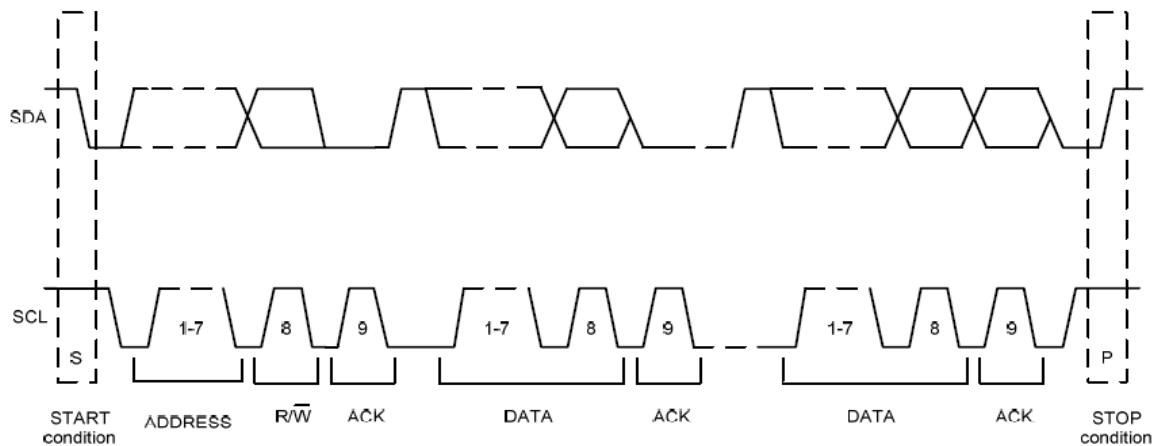
Figure 7.3: I²C data transfer

7.3 Format of data frame (I²C interface)

When master sends the command which be received by TP controller, the controller will responses the code and data. The format of communication is shown as Figure 7.4. The Command table that is written by master is defined on Table9.1 Command Table, Controller will response the response code first and data later.
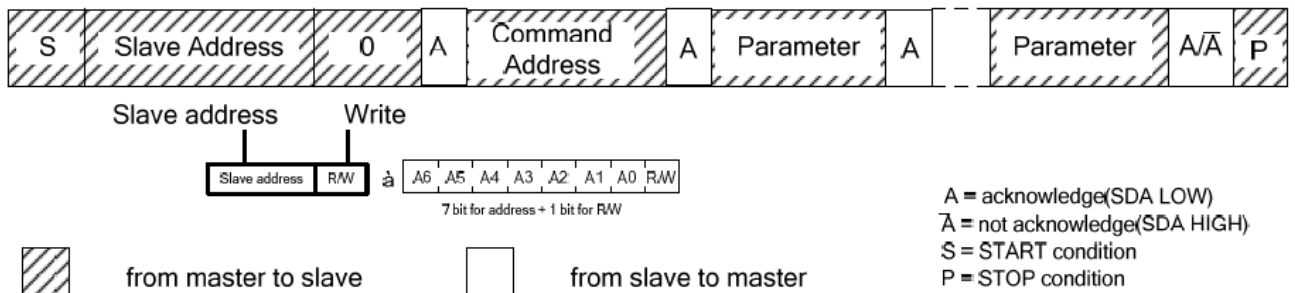
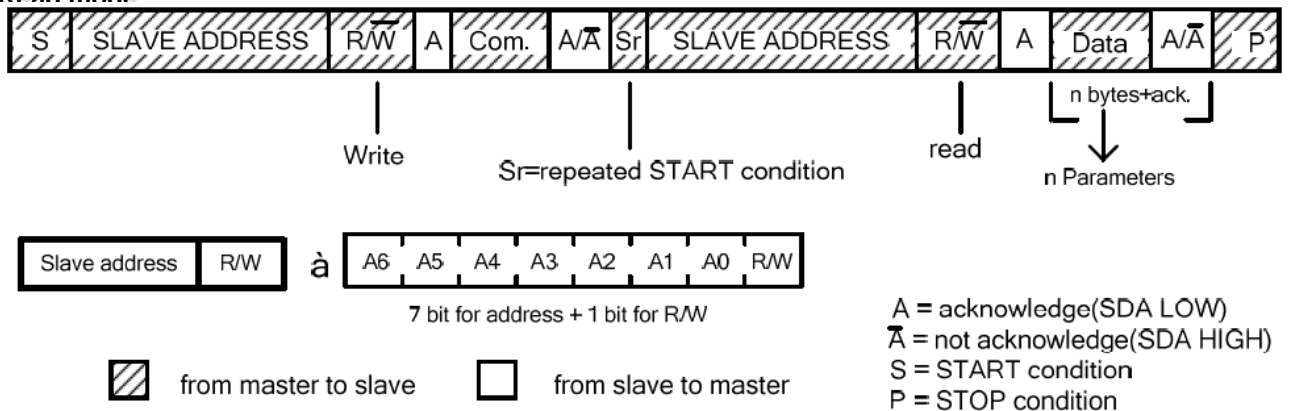**Write mode**

Figure 7.4: Data format of writing mode

Read mode

Figure 7.5: Data format of reading mode

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8. COMMAND

8.1 Command list

Hex	Operation Code	D7	D6	D5	D4	D3	D2	D1	D0	Function
0	No operation	0	0	0	0	0	0	0	0	-
80	Sleep IN	1	0	0	0	0	0	0	0	-
81	Sleep Out	1	0	0	0	0	0	0	1	-
82	Sense Off	1	0	0	0	0	0	1	0	-
83	Sense On	1	0	0	0	0	0	1	1	-
85	Read Event	1	0	0	0	0	1	0	1	-
	1st parameter	B31	B30	B29	B28	B27	B26	B25	B24	-
	2nd parameter	B23	B22	B21	B20	B19	B18	B17	B16	-
	3rd parameter	B15	B14	B13	B12	B11	B10	B9	B8	-
	4th parameter	B7	B6	B5	B4	B3	B2	B1	B0	-
86	Read All Events	1	0	0	0	0	1	1	0	-
	1st parameter	B31	B30	B29	B28	B27	B26	B25	B24	-
	2nd parameter	B23	B22	B21	B20	B19	B18	B17	B16	-
	3rd parameter	B15	B14	B13	B12	B11	B10	B9	B8	-
	4th parameter	B7	B6	B5	B4	B3	B2	B1	B0	-
	5th parameter	E3	E2	E1	E0	FI	P2	P1	P0	-
	6th parameter	B23	B22	B21	B20	B19	B18	B17	B16	-
	…	:	:	:	:	:	:	:	:	-
	(n+1)th parameter	B7	B6	B5	B4	B3	B2	B1	B0	-
87	Read Latest Event	1	0	0	0	0	1	1	1	-
	1st parameter	B31	B30	B29	B28	B27	B26	B25	B24	-
	2nd parameter	B23	B22	B21	B20	B19	B18	B17	B16	-
	3rd parameter	B15	B14	B13	B12	B11	B10	B9	B8	-
	4th parameter	B7	B6	B5 0	B4	B3	B2	B1	B0	-
88	Clear Stack	1	0		0	1	0	0	0	-
9E	TS Software Reset	1	0	0	1	1	1	1	0	-

8.2 User define command list table

Hex	Operation Code	D7	D6	D5	D4	D3	D2	D1	D0	Function
31h	Device ID	0	0	1	1	0	0	0	1	Response Device ID Code
	1st parameter	85								-
	2nd parameter	20								-
	3nd parameter	00								-
32h	Version ID	0	0	1	1	0	0	0	1	Read Firmware version

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9. COMMAND DESCRIPTION

9.1 NOP

00 H	NOP (No Operation)									
	DNC	D7	D6	D5	D4	D3	D2	D1	D0	HEX
Command	0	0	0	0	0	0	0	0	0	00
Parameter	No parameter									
Description	This command is an empty command and it does not have any effect on the touch screen.									
Restriction	-									
Register Availability	Status		Availability							
	TS Sleep Out		Yes							
	TS Sleep In		Yes							
Default	Status		Default Value							
	Power Up Sequence		N/A							
	TS S/W Reset		N/A							
	H/W Reset		N/A							
Flow Chart	-									

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9.2 TS sleep in (80h)

80 H	TSSLPIN (Touch Screen Sleep In)									
	DNC	D7	D6	D5	D4	D3	D2	D1	D0	HEX
Command	0	1	0	0	0	0	0	0	0	80
Parameter	No parameter									
Description	This command causes the touch screen to enter the minimum power consumption mode. MCU interface are register are still working and keeps their contents.									
Restriction	This command has no effect when the touch screen is already in TS Sleep In mode. TS Sleep In Mode can only be left by the TS Sleep Out Command (81h). It will be necessary to wait 5msec before sending next command. This is to allow time for the supply voltages and clock circuits to stabilize. It will be necessary to wait 5msec after sending TS Sleep Out command (when in TS Sleep In Mode) before TS Sleep In command can be sent.									
Register Availability	<table><tr><td>Status</td><td>Availability</td></tr><tr><td>TS Sleep Out</td><td>Yes</td></tr><tr><td>TS Sleep In</td><td>Yes</td></tr></table>									
Default	<table><tr><td>Status</td><td>Default Value</td></tr><tr><td>Power Up Sequence</td><td>TS Sleep In Mode</td></tr><tr><td>TS S/W Reset</td><td>TS Sleep In Mode</td></tr><tr><td>H/W Reset</td><td>TS Sleep In Mode</td></tr></table>									
Flow Chart										

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9.3 TS sleep out (81h)

81 H	TSSLPOUT (Touch Screen Sleep Out)								
	DNC	D7	D6	D5	D4	D3	D2	D1	D0	HEX
Command	0	1	0	0	0	0	0	0	1	81
Parameter	No parameter									
Description	This command turns off TS Sleep In mode.									
Restriction	This command has no effect when touch screen is already in TS Sleep Out mode. TS Sleep Out Mode can only be left by the TS Sleep In Command (80h). It will be necessary to wait 5msec before sending next command. This is to allow time for the supply voltages and clock circuits to stabilize. The touch screen loads all touch screen supplier's factory default values to the registers during this 5msec and there cannot be any abnormal effect on the touch screen functionality if factory default and register values are same when this load is done and when the touch screen is already TS Sleep Out – mode. It will be necessary to wait 5msec after sending TS Sleep In command (when in TS Sleep Out mode) before TS Sleep Out command can be sent.									

Register Availability	Status	Availability
	TS Sleep Out	Yes
	TS Sleep In	Yes

Default	Status	Default Value
	Power Up Sequence	TS Sleep In Mode
	TS S/W Reset	TS Sleep In Mode
	H/W Reset	TS Sleep In Mode

Flow Chart

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9.4 TS sense off (82h)

82 H		DNC	D7	D6	D5	D4	D3	D2	D1	D0	HEX
Command		0	1	0	0	0	0	0	1	0	82
Parameter	No parameter										
Description	The touch screen is not sensing touches (= No new events), but the touch screen is still scanning.										
Restriction	-										

Register Availability	Status	Availability
	TS Sleep Out	Yes
	TS Sleep In	Yes

Default	Status	Default Value
	Power Up Sequence	TS Sense Off
	TS S/W Reset	TS Sense Off
	H/W Reset	TS Sense Off

Flow Chart

9.5 TS sense on (83h)

83 H	TSSON (Touch Screen Sense On)									
	DNC	D7	D6	D5	D4	D3	D2	D1	D0	HEX
Command	0	1	0	0	0	0	0	1	1	83
Parameter	No parameter									
Description	The touch screen is sensing touches (= No new events).									
Restriction	-									

Register Availability	Status	Availability
	TS Sleep Out	Yes
	TS Sleep In	Yes

Default	Status	Default Value
	Power Up Sequence	TS Sense Off
	TS S/W Reset	TS Sense Off
	H/W Reset	TS Sense Off

Flow Chart

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9.6 Read One Event (85h)

85 H	ROE (Read One Event)									
	DNC	D7	D6	D5	D4	D3	D2	D1	D0	HEX
Command	0	1	0	0	0	0	1	0	1	85
1st parameter	-	B31	B30	B29	B28	B27	B26	B25	B24	xx
2nd parameter	-	B23	B22	B21	B20	B19	B18	B17	B16	xx
3rd parameter	-	B15	B14	B13	B12	B11	B10	B9	B8	xx
4th parameter	-	B7	B6	B5	B4	B3	B2	B1	B0	xx

Description	This command returns touch co-ordinates what is the oldest co-ordinates information what has been stored on the stock. A returning value can be "No Event" if the stock is empty. The default assignment is list as below. The assignment of event stack also can be modified if necessary (base on the requirement of customer).

HX8520-C
Event stack

```
Yn
(Low byte)
   .
   .
Y1
(Low byte)
Y1
(High byte)
X1
(Low byte)
X1
(High byte)   ◄── Pointer
```

Restriction	-

Register Availability	Status	Availability
	TS Sleep Out	Yes
	TS Sleep In	Yes

Default	Status	Default Value
	Power Up Sequence	0000 0000h
	TS S/W Reset	0000 0000h
	H/W Reset	0000 0000h

Flow Chart	

Legend

Command

Parameter

Touch Screen

Action

Mode

Sequential transfer

ROE — Host

Send 1st parameter — Touch Screen

Send 2nd parameter

Send 3rd parameter

Send 4th parameter

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9.7 Read All Event (86h)

86 H	RAE (Read All Events)									
	DNC	D7	D6	D5	D4	D3	D2	D1	D0	HEX
Command	0	1	0	0	0	0	1	1	0	86
1st parameter	-	B31	B30	B29	B28	B27	B26	B25	B24	xx
2nd parameter	-	B23	B22	B21	B20	B19	B18	B17	B16	xx
3rd parameter	-	B15	B14	B13	B12	B11	B10	B9	B8	xx
4th parameter	-	B7	B6	B5	B4	B3	B2	B1	B0	xx
5th parameter	-	E3	E2	E1	E0	FI	P2	P1	P0	xx
6th parameter	-	B23	B22	B21	B20	B19	B18	B17	B16	xx
:	-	:	:	:	:	:	:	:	:	:
(n+1)th Parameter	-	B7	B6	B5	B4	B3	B2	B1	B0	xx

Description	This command returns touch co-ordinates what is the oldest co-ordinates information what has been stored on the stock. A returning value can be "No Event" if the stock is empty. The default assignment is list as below. The assignment of event stack also can be modified if necessary (base on the requirement of customer). HX8520-C Event stack Yn (Low byte) . . Y1 (Low byte) Y1 (High byte) X1 (Low byte) X1 (High byte) ← Pointer
Restriction	This read command cannot use with LoSSI.
Register Availability	**Status** / **Availability** TS Sleep Out / Yes TS Sleep In / Yes
Default	**Status** / **Default Value** Power Up Sequence / All Values 0000 0000h TS S/W Reset / All Values 0000 0000h
Flow Chart	I²C Mode Read RAE Host Events Touch Screen Legend Command Parameter Touch Screen Action Mode Sequential transfer

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9.8 Read Latest Event (87h)

87H	RLE (Read Latest Event)									
	DNC	D7	D6	D5	D4	D3	D2	D1	D0	HEX
Command	0	1	0	0	0	0	1	1	1	87
1st parameter	-	B31	B30	B29	B28	B27	B26	B25	B24	xx
2nd parameter	-	B23	B22	B21	B20	B19	B18	B17	B16	xx
3rd parameter	-	B15	B14	B13	B12	B11	B10	B9	B8	xx
4th parameter	-	B7	B6	B5	B4	B3	B2	B1	B0	xx

Description	This command returns one touch event what is the latest co-ordinates information what has been stored on the stock. The event stack is empty after this command. A returning value can be "No Event" if the stock is empty. The default assignment is list as below. The assignment of event stack also can be modified if necessary (base on the requirement of customer). HX8520-C Event stack Yn (Low byte) . Y1 (Low byte) Y1 (High byte) X1 (Low byte) X1 (High byte) ← Pointer

Restriction	-

Register Availability	Status	Availability
	TS Sleep Out	Yes
	TS Sleep In	Yes

Default	Status	Default Value
	Power Up Sequence	0000 0000h
	TS S/W Reset	0000 0000h
	H/W Reset	0000 0000h

Flow Chart	(flow chart)

Read RLE — Host

Send 1st parameter — Touch Screen

Send 2nd parameter

Send 3rd parameter

Send 4th parameter

Legend

Command

Parameter

Touch Screen

Action

Mode

Sequential transfer

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9.9 Clear Event Stack (88h)

88 H	CLRES (Clear Event Stack)									
	DNC	D7	D6	D5	D4	D3	D2	D1	D0	HEX
Command	0	1	0	0	0	1	0	0	0	88
Parameter	No parameter									
Description	This command clears event stack when the only return event can be "No Event".									
Restriction	-									

Register Availability	Status	Availability
	TS Sleep Out	Yes
	TS Sleep In	Yes

Default	Status	Default Value
	Power Up Sequence	Empty Stack
	TS S/W Reset	Empty Stack
	H/W Reset	Empty Stack

Flow Chart

9.10 TS Software Reset (9Eh)

9EH	TSSWRESET (Touch Screen Software Reset)									
	DNC	D7	D6	D5	D4	D3	D2	D1	D0	HEX
Command	0	1	0	0	1	1	1	1	0	9E
Parameter	No parameter									
Description	When the Touch Screen Software Reset command is written, it causes a software reset. It resets the commands and parameters to their TS S/W Reset default values. (See default tables in each command description.) Note: The Memory contents are unaffected by this command									
Restriction	It will be necessary to wait 5msec before sending new command following software reset. The touch screen loads all touch screen supplier's factory default values to the registers during this 5msec. If Software Reset is applied during TS Sleep Out mode, it will be necessary to wait 5msec before sending TS Sleep Out command. Touch Screen Software Reset Command cannot be sent during TS Sleep Out sequence.									
Register Availability	Status		Availability							
	TS Sleep Out		Yes							
	TS Sleep In		Yes							
Default	Status		Default Value							
	Power Up Sequence		N/A							
	TS S/W Reset		N/A							
	H/W Reset		N/A							
Flow Chart										

9.11 Device ID Command (31h)

31H	Device ID									
	DNC	D7	D6	D5	D4	D3	D2	D1	D0	HEX
Command	0	0	0	1	1	0	0	0	1	31
1st parameter	1	85								00..FF
2nd parameter	1	20								00..FF
3rd parameter	1	0A								00..FF
Description	When the Device ID command is written, HX8520-C will echo the device ID to master. The index of Device ID command is 31h									
Restriction	"No Events" (E00) and "Error" (E15) are always valid and these bits are not valid for these functionalities.									
Register Availability	Status			Availability						
	TS Sleep Out			Yes						
	TS Sleep In			Yes						
Default	Status			Default Value						
	Power Up Sequence			TBD						
	TS S/W Reset			TBD						
	H/W Reset			TBD						
Flow Chart	-									

9.12 Version ID Command (32h)

32H	Version ID									
	DNC	D7	D6	D5	D4	D3	D2	D1	D0	HEX
Command	0	0	0	1	1	0	0	1	0	32
1st parameter	1	Version								00..FF
Description	When the Device ID command is written, HX8520-C will echo the device ID to master. The index of Device ID command is 32h.									
Restriction	"No Events" (E00) and "Error" (E15) are always valid and these bits are not valid for these functionalities.									
Register Availability	Status			Availability						
	TS Sleep Out			Yes						
	TS Sleep In			Yes						
Default	Status			Default Value						
	Power Up Sequence			TBD						
	TS S/W Reset			TBD						
	H/W Reset			TBD						
Flow Chart	-									

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10. QUALITY ASSURANCE

10.1 Test Condition

10.1.1 Temperature and Humidity(Ambient Temperature)
Temperature : $25 \pm 5°C$
Humidity : $65 \pm 5\%$

10.1.2 Operation
Unless specified otherwise, test will be conducted under function state.

10.1.3 Container
Unless specified otherwise, vibration test will be conducted to the product itself without putting it in a container.

10.1.4 Test Frequency
In case of related to deterioration such as shock test.   It will be conducted only once.

10.1.5 Test Method

No.	Reliability Test Item & Level Test Item	Test Level
1.	High Temperature Storage Test	T= 80℃,120hrs after 1 hrs at room temperature and test.
2.	Low Temperature Storage Test	T= -30℃,120hrs after 1 hrs at room temperature and test.
3.	High Temperature Operation Test	T= 70℃ , 120hrs after 1 hrs at room temperature and test.
4.	Low Temperature Operation Test	T= -20℃, 120hrs after 1 hrs at room temperature and test.
5.	High Temperature and High Humidity Operation Test	T= 40℃,80%RH,120hrs after 24 hrs at room temperature and test.
6.	Thermal Cycling Test (No operation)	-20 ℃ 30min ~ 70 ℃ 30 min , 10 Cycles after 24 hrs at room temperature and test.
7.	Surface Hardness	Pencil Hardness 7H
8.	Vibration Test (No operation)	Frequency :10 ~ 55 H$_Z$ Amplitude :1.5 mm Sweep time : 11 mins Test Period: 6 Cycles for each direction of X, Y, Z
9.	ESD TEST	Air Discharge : ±15 KV charge & discharge Contact Discharge : ±2KV charge & discharge

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11. APPEARANCE SPECIFICATION

11.1Inspection and Environment conditions

11.1.1 Temperature: 25± 5℃

11.1.2 Humidity: 55 ± 10% RH

11.1.3 Light source: Fluorescent Light

11.1.4 Inspection: Viewing distance: 35±5cm

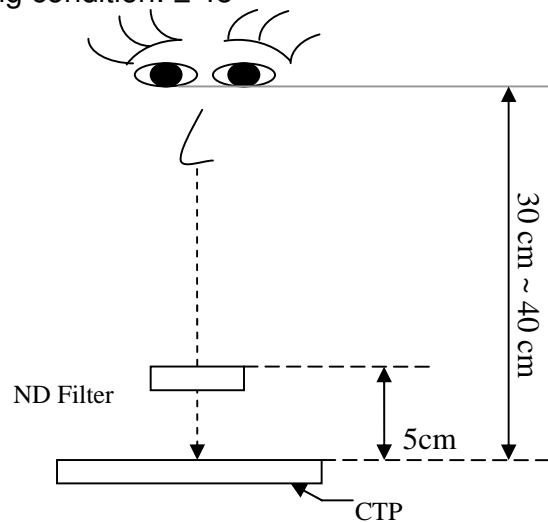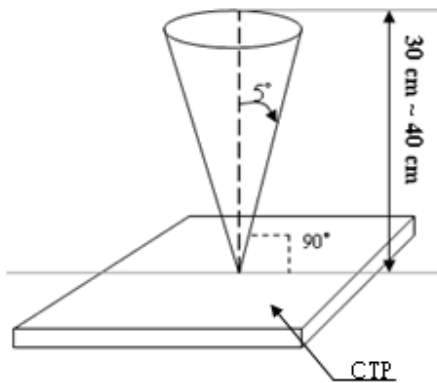11.1.5 Ambient Illumination:

(1) Cosmetic Inspection: 500 ~ 800 lux

(2) Functional Inspection: 400 ~ 600 lux

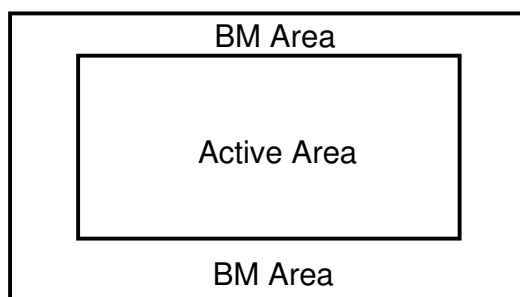11.1.6 Inspection View angle:

(1) Inspection under operating condition: ±5°

(2) Inspection under non-operating condition: ± 45°

11.2 Definition of applicable Zones
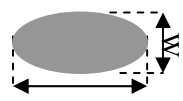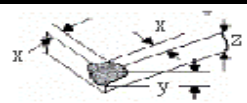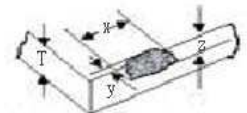

11.3 Judgment standard
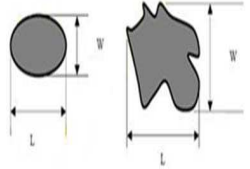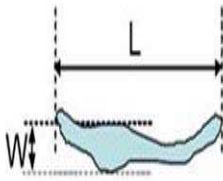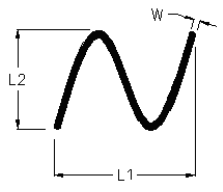
The Judgment of the above test should be made after exposure in room temperature for two hours as follow:

Pass: Normal display image with no obvious non-uniformity and no line defect. Partial transformation of the module parts should be ignored.

Fail: No display image, obvious non-uniformity, or line defect.

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11.4 Cosmetic Specification and Inspection Items

Inspection Item	Inspection Criteria	Illustration
Foreign material (Black or White spots shape)	<table><tr><td>Zone Dimension</td><td>Acceptable number</td><td>Class of Defects</td></tr><tr><td>D> 0.5 mm</td><td>0</td><td rowspan="3">Minor</td></tr><tr><td>0.3mm≦D≦0.5 mm</td><td>5</td></tr><tr><td>D< 0.3mm</td><td>*</td></tr></table>	D= (L + W) / 2
Foreign Material (Line shape)	<table><tr><td>Zone Dimension</td><td>Acceptable number</td><td>Class of Defects</td></tr><tr><td>W> 0.08mm or L >10mm</td><td>0</td><td rowspan="3">Minor</td></tr><tr><td>0.05 mm≦W≦0.08 mm L ≦10mm</td><td>5</td></tr><tr><td>W< 0.05mm</td><td>*</td></tr></table>	L : Long W : Width
Dimension	Outline	(Major)
Scratch on the Touch panel	<table><tr><td>Zone Dimension</td><td>Acceptable number</td><td>Class of Defects</td></tr><tr><td>W> 0.1mm or L >10mm</td><td>0</td><td rowspan="2">Minor</td></tr><tr><td>W≦0.1 mm L≦ 10mm</td><td>5</td></tr></table>	
Dent on the Touch panel	<table><tr><td>Zone Dimension</td><td>Acceptable number</td><td>Class of Defects</td></tr><tr><td>D> 0.5 mm</td><td>0</td><td rowspan="2">Minor</td></tr><tr><td>0.3mm ≦D≦ 0.5 mm</td><td>5</td></tr></table>	L D= (L + W) / 2
Corner Chipping	X<3 mm, Y<3 mm, Z< Glass thickness	
Edge Chipping	X<3 mm, Y<3 mm, Z< Glass thickness	
Crack	reject	

13. PRECAUTIONS IN USE CTP

1. ASSEMBLY PRECAUTIONS
   (1) Since Touch Panel is consist of glass, please be careful your hands to be injured during handing. You must wear gloves during handing.
   (2) Do not touch, push or rub the exposed touch panel, tweezers or anything harder than HB pencil lead. And please do not rub with dust clothes with chemical treatment.
   (3) Do not stack the touch panels together. Do not put heavy objects on touch panel.
   (4) Please do not take a CTP to pieces and reconstruct it. Resolving and reconstructing modules may cause them not to work well.
   (5) Please excessive force or strain to the panel or tail is prohibited, Do not lift touch panel by cable(FPC).
   (6) Use clean sacks or glove to prevent fingerprints and/or stains left on the panel. Extra attention and carefulness should be taken while handling the glass edge.
   (7) Please pay attention for the matters stated below at mounting design of touch panel enclosure. Enclosure support to fix touch panel must be out of active area.(do not design enclosure presses the active area to protect from miss put)

2. OPERATING PRECAUTIONS
   (1) Please be sure to turn off the power supply before connecting and disconnecting signal input cable.
   (2) Please do not change variable resistance settings in CTP. They are adjusted to the most suitable value. If they are changed, it might happen CTP does not satisfy the characteristics specification
   (3) Be careful for condensation at sudden temperature change. Condensation makes damage to sensor or electrical contacted parts.
   (4) CTP has high frequency circuits. Sufficient suppression to the electromagnetic interference shall be done by system manufacturers. Grounding and shielding methods may be important to minimize the interference.
   (5) Touch the panel with your finger or stylus only to assure normal operation. Any sharp edged or hard objects are prohibited.
   (6) Operate the panel in a steady environment. Abrupt variation on temperature and humidity may cause malfunction of the panel.

3. ELECTROSTATIC DISCHARGE CONTROL
   (1) The operator should be grounded whenever he/she comes into contact with the CTP. Never touch any of the conductive parts such the copper leads on the FPC and the interface terminals with any parts of the human body.

   (2) The CTP should be kept in antistatic bags or other containers resistant to static for storage.
   (3) Only properly grounded soldering irons should be used.
   (4) If an electric screwdriver is used, it should be well grounded and shielded from commentator sparks.
   (5) The normal static prevention measures should be observed for work clothes and working benches; for the latter conductive (rubber) mat is recommended
   (6) Since dry air is inductive to statics, a relative humidity of 50-60% is recommended.

5. STORAGE PRECAUTIONS
   (1) When you store touch panel for a long time, it is recommended to keep the temperature between 0°C-40°C without the exposure of sunlight and to keep the humidity less than 90%RH.
   (2) Please do not leave touch panel in the environment of high humidity and high temperature such as 60°C 90%RH
   (3) Please do not leave touch panel in the environment of low temperature; below -20°C.

6. OTHERS
   For the packaging box, please pay attention to the followings:
   a. Please do not pile them up more than 5 boxes. (They are not designed so.) And please do not turn over.
   b. Please handle packaging box with care not to give them sudden shock and vibrations. And also please do not throw them up.
   c. Packing box and inner case for CTP are made of cardboard. So please pay attention not to get them wet. (Such like keeping them in high humidity or wet place can occur getting them wet.)

7. LIMITED WARRANTY
   Unless otherwise agreed between Ej ght gg"Vgej 0 and customer, Ej ght gg"Vgej 0 will replace or repair any of its CTP which is found to be defective electrically and visually when inspected in accordance with Ej ght gg"Vgej 0 acceptance standards, for a period on one year from date of shipment. Confirmation of such date shall be based on freight documents. The warranty liability of Ej ght gg"Vgej 0 is limited to repair and/or replacement on the terms set forth above. Ej ght gg" Vgej 0 will not responsible for any subsequent or consequential events.

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14. OUTLINE DRAWING

PRELIMINARY

73.9±0.1*

6.4±0.2*
61.1
7.767
58.366 Sensor V.A.
8.37±0.15
57.16±0.15 Corver V.A.

8.644±0.2*
9.644
10.25±0.15

4-R2

1.35±0.2*

Ink color : Pantone Black C
t<=12um (on bottom side)

Cover lens 0.7±0.07

Touch Sensor 0.5±0.05

4.3" Projective Capacitive

"B"

115.1±0.1*
100
95.812 Sensor V.A.
94.6±0.15 Cover V.A.

Detail "B"
Scale 10/1

27.488±0.5*

21.944

1.5 Max

Stiffener

Stiffener   Contact Side

0.3±0.05*

UV Glue

LABEL

"A"

R1*2
Component Area

(33.1723)   15.5

備註說明：
1. For RoHS.
2. * is important dimension.
3. The bending radius of FPC should be larger than 0.6mm.
4. Tolerance is ±0.2 unless otherwise noted.

Top View

Bottom View

CTP (I2C)
PIN FUNCTIONS
1. VCC
2. RES
3. INT
4. SDA
5. SCL
6. VSS

3
1   6
w=0.3
P0.5x(6-1)=2.5
0.5
3.5±0.15

Detail "A"
Scale 4/1

			DATE:	2011/08/19	TITLE:
			DRAWN:		4.3" CTP
Add LABEL & important dimension & modify dimension. <ECR 110-C80008>	09/18/12'		CHECK:		DWG. NO. REV. 2
AUTH DESCRIPTION	DATE	APPROVED	APPROVE:		CheFree Chefree Technolog Inc. 齊飛科技股份有限公司
REVISIONS					SCALE 1/1 SHEET 1 OF 1

15. PACKAGE INFORMATION

Bubble bag

Module

(2)

(1)

Item	Size(L*W*H)		Quantity	Note
1.Master Carton	482*282*279		1	
2.Inner Carton	267*224*115		4	
Quantity Per Inner Carton	20	Quantity Per Master Carton	80	
N . W	1.92 (kg)	G . W	2.92 (kg)	

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