

億力光電股份有限公司

EVERVISION ELECTRONICS CO., LTD.

Product Specification For Touch Panel

(KVPF-7B-002-16)

Model NO. : VIM04300-INB(RoHS)

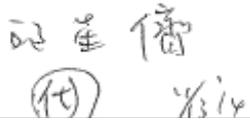
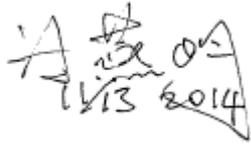
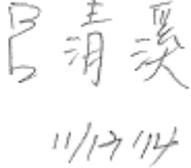
REVISION : 4

APPROVAL FOR SPECIFICATIONS ONLY

APPROVAL FOR SPECIFICATIONS AND SAMPLE

CUSTOMER : S.T.D.	APPROVED BY :
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EVERVISION LCM R&D CENTER

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EVERVISION	MODEL NO.		PAGE
	VIM04300-INB	SPEC&SAMPLE	2

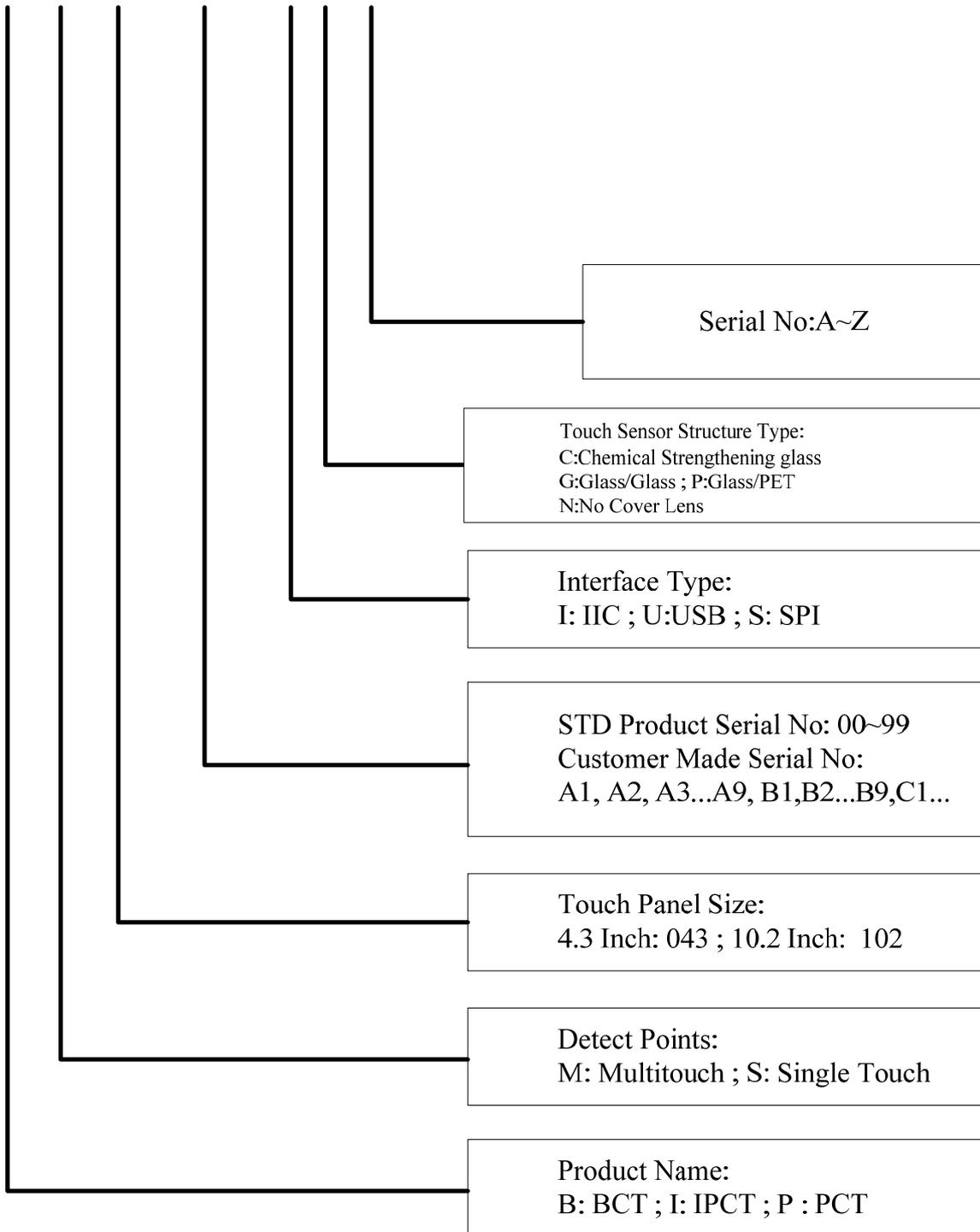
1. Table of Contents

No.	Contents	Page
1	Table of Contents	2
2	Record of Revisions	3
3	Module Numbering System	4
4	Application	5
5	Features	5
6	General Specifications	5
7	Absolute Maximum Ratings	6
8	Electrical Characteristics	7
9	Block Diagram	8
10	Input / Output Terminals Pin Assignment	9
11	Interface Timing	10
12	Optical Characteristics	16
13	Reliability Test	17
14	Standard of appearance inspection	18
15	Mechanical Drawing	19
16	Packaging	20

EVERVISION	MODEL NO.		PAGE
	VIM04300-INB	SPEC&SAMPLE	4

3. Module Numbering System

V I M 043 00 - I N B



EVERVISION	MODEL NO.		PAGE
	VIM04300-INB	SPEC&SAMPLE	5

4. Application

This improved projected capacitive touch (IPCT) panel module is applied to consumer and industrial applications which required touch input. This product is composed of two ITO glasses with control IC which mounts on FPC.

5. Features

- 2048 x 2048 resolution.
- I²C Interface.

6. General Specifications

Item	Specifications	Unit
Touch Panel Size	4.3 (Diagonal)	inch
Resolution	2048x2048	-
Active Area	95.95(H)x54.8(V)	mm
View Area	99.7(H)x57.76(V)	mm
Transparency	≥ 85%	-
Surface Hardness	≥ 7 H	-
Detect Points	10	-
Interface	I ² C	-
Outline Dimension	105.5(W)x67.2(V)x1.4(D)	mm
Weight	26.7	g
RoHS Compliance	Evervision certifies this product to be in compliance with European Union Directive 2011/65/EU on the restriction of certain hazardous substances in electrical and electronic equipment.	-

EVERVISION	MODEL NO.		PAGE
	VIM04300-INB	SPEC&SAMPLE	6

7. Absolute Maximum Ratings

7.1 Absolute Ratings of Environment

Item	Symbol	Value		Unit	Note
		Min.	Max.		
Storage Temperature	T _{ST}	-30	+80	°C	(1)
Operating Ambient Temperature	T _{OP}	-20	+70	°C	(1)(2)

Note1: Ta ≤ 70°C : 75%RH max.

Note2: Please refer to item of RELIABILITY.

7.2 Electrical Absolute Ratings

(Ta=25±2°C, GND=0V)

Item	Symbol	Value		Unit	Note
		Min.	Max.		
Digital Power Supply Voltage	VDD	-0.3	3.6	V	-

EVERVISION	MODEL NO.		PAGE
	VIM04300-INB	SPEC&SAMPLE	7

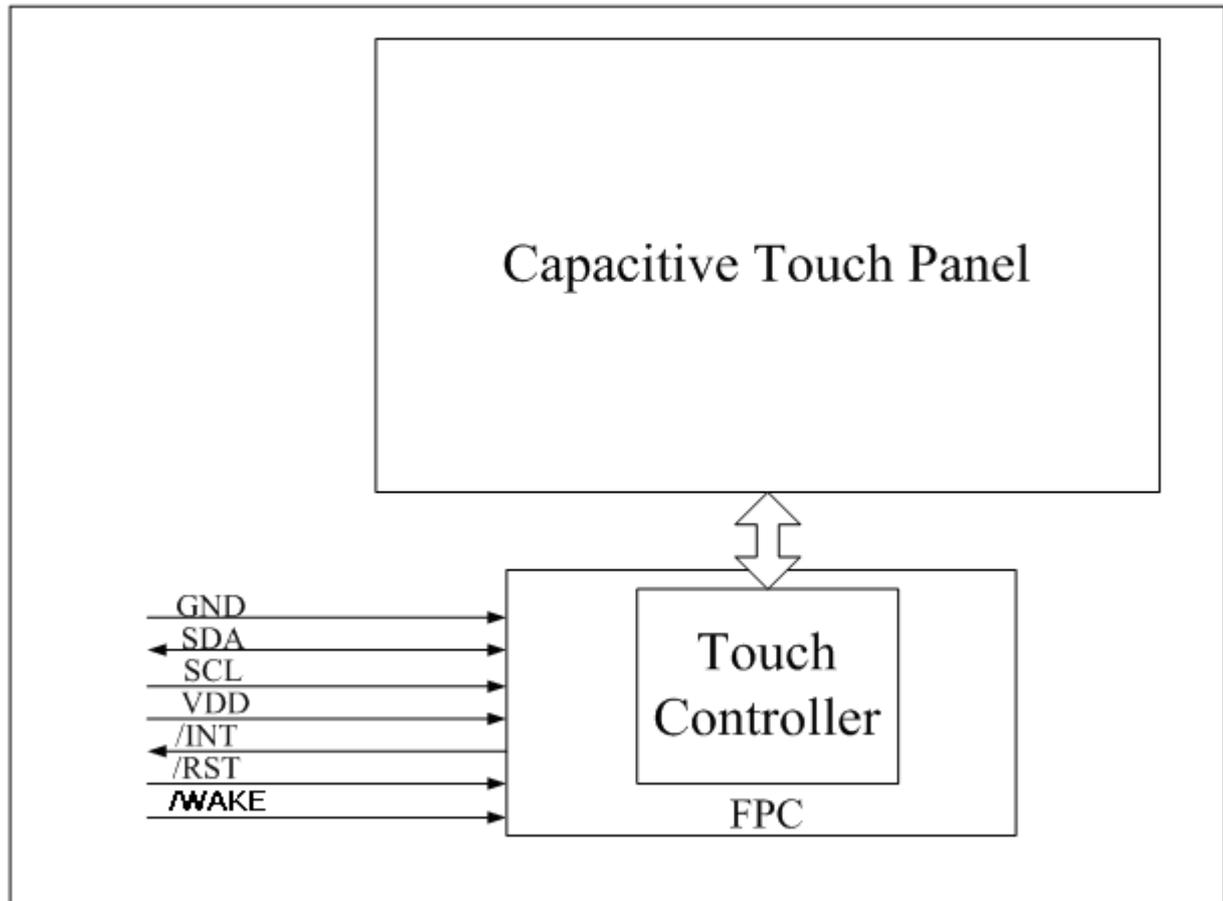
8. Electrical Characteristics

(Ta=25±2°C)

Item	Symbol	Value			Unit	Note
		Min.	Typ.	Max.		
Power Supply Voltage	VDD	3.0	3.3	3.6	V	-
Power Supply Current	IDD	-	10.0	14.0	mA	(1)
Input High Threshold Voltage	V _{IH}	0.7VDD	-	VDD	V	-
Input Low Threshold Voltage	V _{IL}	-0.3	-	0.3VDD	V	-
Output High Threshold Voltage	V _{OH}	0.7VDD	-	-	V	-
Output Low Threshold Voltage	V _{OL}	-	-	0.3VDD	V	-
Power Consumption	P _L	-	33.3	46.2	mW	@3.3V
Report Rate	R _R	-	60	-	Hz	-

Note (1) This test condition is touched with 10 points.

9. Block Diagram



EVERVISION	MODEL NO.		PAGE
	VIM04300-INB	SPEC&SAMPLE	9

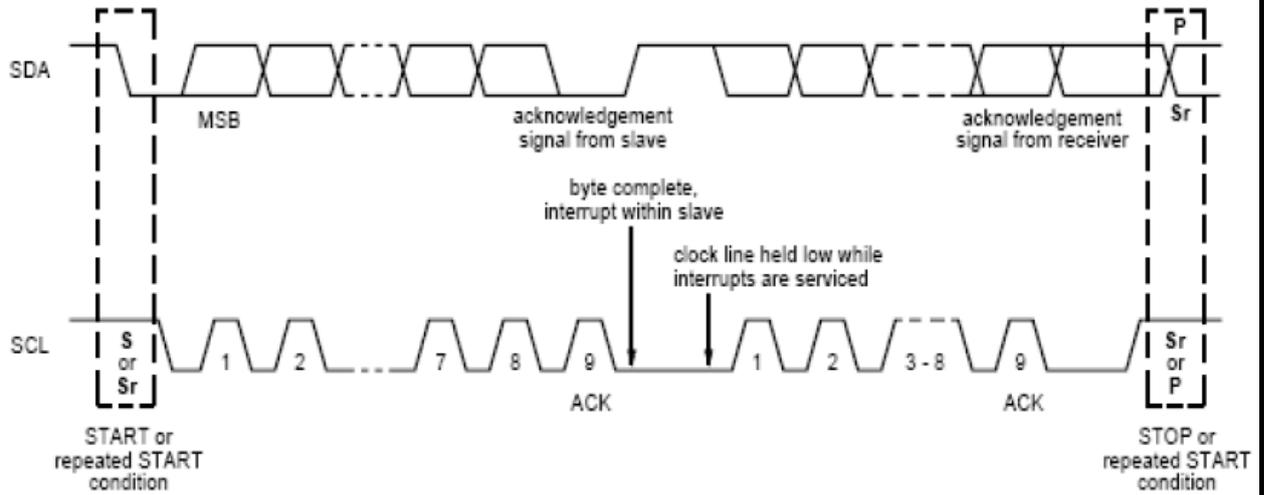
10. Input / Output Terminals Pin Assignment

Connector: CVILUX CF25101D0R0-05

Pin No.	Symbol	I/O	Description
1	GND	I	System ground.
2	VDD	I	+3.3V power supply.
3	/RST	I	External reset signal, active low.
4	/INT	O	Interrupt signal, active low, asserted to request Host start a new transaction.
5	SDA	I/O	I ² C data signal.
6	SCL	I	I ² C clock signal.
7	/WAKE	I	Wakeup signal
8	NC	-	Not Connection
9	NC	-	Not Connection
10	GND	I	System ground.

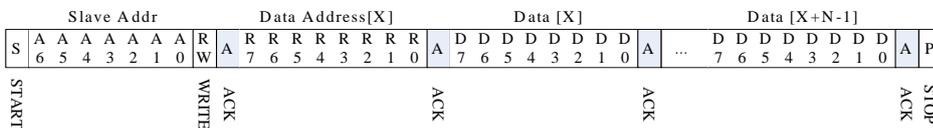
11. Interface Timing

11.1 I2C Data Transfer Format

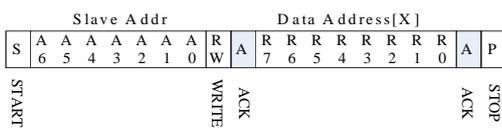


Mnemonics	Description
S	I ² C Start or I ² C Restart
A[6:0]	Slave Address = 7'b0111000
W	1'b0: Write
R	1'b1: Read
C	ACK
P	STOP: the indicate the end of a packet (if this bit is missing, S will indicate the end of the current packet and the beginning of the next packet)

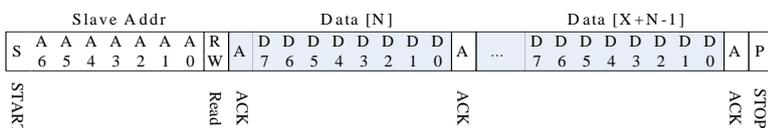
Write N bytes to I2C slave



Set Data Address



Read X bytes from I²C Slave



EVERVISION	MODEL NO.		PAGE
	VIM04300-INB	SPEC&SAMPLE	12

Op,09h	TOUCH2_YH	2 nd Event Flag		2 nd Touch Y Position[11:8]	R
Op,0Ah	TOUCH2_YL	2 nd touch Y Position[7:0]			R
Op,0Bh	TOUCH2_XH	2 nd Touch ID[3:0]		2 nd Touch X Position[11:8]	R
Op,0Ch	TOUCH2_XL	2 nd Touch X Position[7:0]			R
Op,0Dh	Reserved				R
Op,0Eh	Reserved				R
Op,0Fh	TOUCH3_YH	3 rd Event Flag		3 rd Touch Y Position[11:8]	R
Op,10h	TOUCH3_YL	3 rd Touch Y Position[7:0]			R
Op,11h	TOUCH3_XH	3 rd Touch ID[3:0]		3 rd Touch X Position[11:8]	R
Op,12h	TOUCH3_XL	3 rd Touch X Position[7:0]			R
Op,13h	Reserved				R
Op,14h	Reserved				R
Op,15h	TOUCH4_YH	4 th Event Flag		4 th Touch Y Position[11:8]	R
Op,16h	TOUCH4_YL	4 th Touch Y Position[7:0]			R
Op,17h	TOUCH4_XH	4 th Touch ID[3:0]		4 th Touch X Position[11:8]	R
Op,18h	TOUCH4_XL	4 th Touch X Position[7:0]			R
Op,19h	Reserved				R
Op,1Ah	Reserved				R
Op,1Bh	TOUCH5_YH	5 th Event Flag		5 th Touch Y Position[11:8]	R
Op,1Ch	TOUCH5_YL	5 th Touch Y Position[7:0]			R
Op,1Dh	TOUCH5_XH	5 th Touch ID[3:0]		5 th Touch X Position[11:8]	R
Op,1Eh	TOUCH5_XL	5 th Touch X Position[7:0]			R
Op,1Fh	Reserved				R
Op,20h	Reserved				R
Op,21h	TOUCH6_YH	6 th Event Flag		6 th Touch Y Position[11:8]	R
Op,22h	TOUCH6_YL	6 th Touch Y Position[7:0]			R
Op,23h	TOUCH6_XH	6 th Touch ID[3:0]		6 th Touch X Position[11:8]	R
Op,24h	TOUCH6_XL	6 th Touch X Position[7:0]			R

EVERVISION	MODEL NO.		PAGE
	VIM04300-INB	SPEC&SAMPLE	13

Op,25h	Reserved			R
Op,26h	Reserved			R
Op,27h	TOUCH7_YH	7 th Event Flag	7 th Touch Y Position[11:8]	R
Op,28h	TOUCH7_YL	7 th Touch Y Position[7:0]		R
Op,29h	TOUCH7_XH	7 th Touch ID[3:0]	7 th Touch X Position[11:8]	R
Op,2Ah	TOUCH7_XL	7 th Touch X Position[7:0]		R
Op,2Bh	Reserved			R
Op,2Ch	Reserved			R
Op,2Dh	TOUCH8_YH	8 th Event Flag	8 th Touch Y Position[11:8]	R
Op,2Eh	TOUCH8_YL	8 th Touch Y Position[7:0]		R
Op,2Fh	TOUCH8_XH	8 th Touch ID[3:0]	8 th Touch X Position[11:8]	R
Op,30h	TOUCH8_XL	8 th Touch X Position[7:0]		R
Op,31h	Reserved			R
Op,32h	Reserved			R
Op,33h	TOUCH9_YH	9 th Event Flag	9 th Touch Y Position[11:8]	R
Op,34h	TOUCH9_YL	9 th Touch Y Position[7:0]		R
Op,35h	TOUCH9_XH	9 th Touch ID[3:0]	9 th Touch X Position[11:8]	R
Op,36h	TOUCH9_XL	9 th Touch X Position[7:0]		R
Op,37h	Reserved			R
Op,38h	Reserved			R
Op,39h	TOUCH10_YH	10 th Event Flag	10 th Touch Y Position[11:8]	R
Op,3Ah	TOUCH10_YL	10 th Touch Y Position[7:0]		R
Op,3Bh	TOUCH10_XH	10 th Touch ID[3:0]	10 th Touch X Position[11:8]	R
Op,3Ch	TOUCH10_XL	10 th Touch X Position[7:0]		R
Op,3Dh	Reserved			R
Op,3Eh	Reserved			R

11.4.1 DEVICE_MODE

This register is the device mode register, configure it to determine the current mode of the chip.

Address	Bit Address	Register Name	Description
Op,00h	6:4	Device Mode [2:0]	000b Normal operating Mode 001b System Information Mode (Reserved) 100b Test Mode – read raw data (Reserved)

11.4.2 TD_STATUS

This register is the Touch Data status register.

Address	Bit Address	Register Name	Description
Op,02h	3:0	Number of touch points[3:0]	How many points detected. 1-10 is valid.

11.4.3 TOUCHn_YH (n:1-10)

This register describes MSB of the Y coordinate of the nth touch point and the corresponding event flag.

Address	Bit Address	Register Name	Description
Op,03h ~ Op,39h	7:6	Event Flag	00b: Put Down 01b: Put Up 10b: Contact 11b: No event
	5:4		Reserved
	3:0	Touch Y Position [11:8]	MSB of Touch Y Position in pixels

11.4.4 TOUCHn_YL (n:1-10)

This register describes LSB of the Y coordinate of the nth touch point.

Address	Bit Address	Register Name	Description
Op,04h ~ Op,3Ah	7:0	Touch Y Position [7:0]	LSB of the Touch Y Position in pixels

11.4.5 TOUCHn_XH (n:1-10)

This register describes MSB of the X coordinate of the nth touch point and corresponding touch ID.

Address	Bit Address	Register Name	Description
Op,05h	7:4	Touch ID[3:0]	Touch ID of Touch Point
~ Op,3Bh	3:0	Touch X Position [11:8]	MSB of Touch X Position in pixels

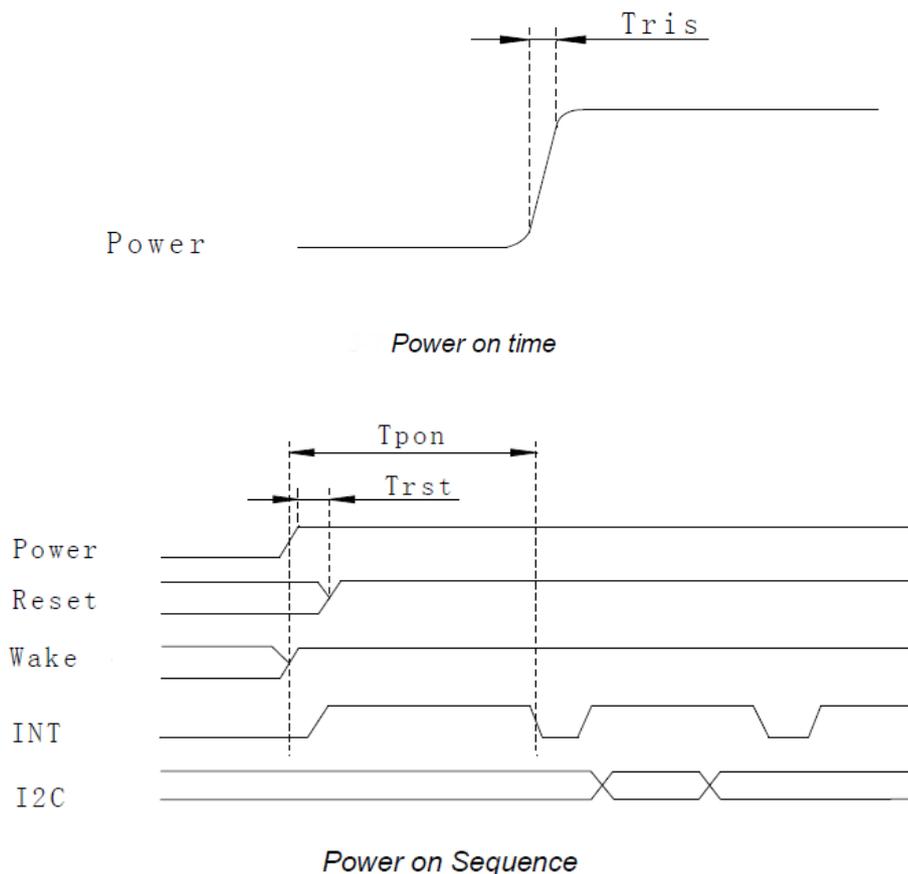
11.4.6 TOUCHn_XL (n:1-10)

This register describes LSB of the X coordinate of the nth touch point.

Address	Bit Address	Register Name	Description
Op,06h	7:0	Touch X Position	LSB of The Touch X Position in pixels
~ Op,3Ch		[7:0]	

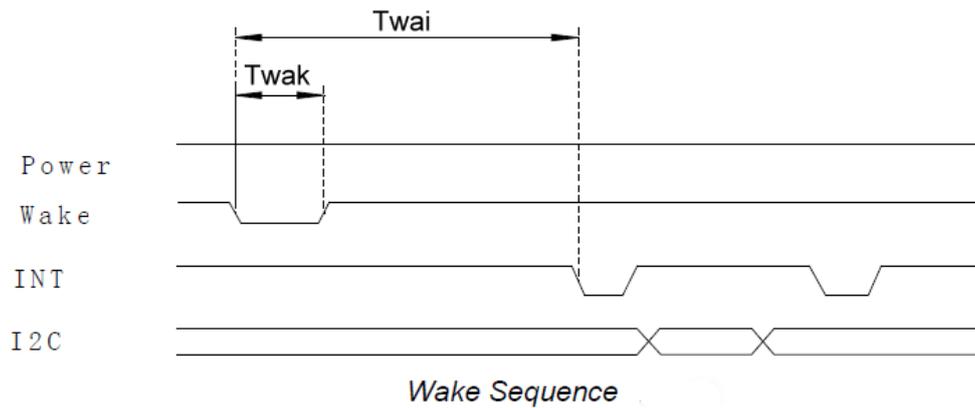
11.5 POWER ON/Reset/Wake Sequence

Reset and GPIO such as /WAKE, /INT and I2C are advised to be low before powering on. The signal of waking up should be set to be high after powering on. /INT signal will be sent to the host after initializing all parameters and then start to report points to the host.



Reset time must be enough to guarantee reliable reset, the time of starting to report point after resetting approach to the time of starting to report point after powering on.

Wake time must be enough to wake up the system, the time of starting to report point after waking approach to the time of starting to report point after powering on.



12. Optical Characteristics

Item	Specifications
Transparency	$\geq 85\%$
HAZE	$\leq 1.5\%$

13. Reliability Test

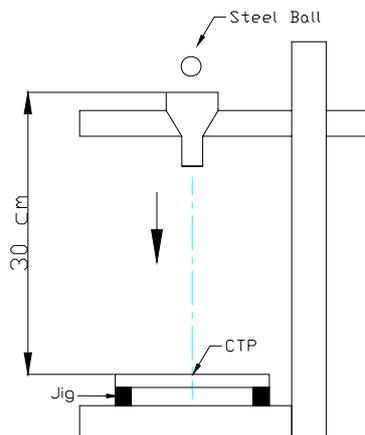
No.	Test Items	Test Condition	Remark
1	High Temperature Storage Test	T _a = 80°C 240 hours	(1),(2)
2	Low Temperature Storage Test	T _a = -30°C 240 hours	(1),(2)
3	High Temperature Operation Test	T _a = 70°C 240 hours	(1),(2)
4	Low Temperature Operation Test	T _a = -20°C 240 hours	(1),(2)
5	High Temperature and High Humidity Operation Test	T _a =60°C 90%RH 240 hours (Without dewing)	(1),(2)
6	Thermal Shock Test (non-operating)	-20°C (30min) ~ 70°C (30min), 10 cycles	(1),(2)

Note:

- (1) In the standard condition, there shall be no practical problem that may affect the display function. After the reliability test, the product only guarantees operation, but don't guarantee all of the cosmetic specification.
- (2) Before cosmetic and function test, the product must have enough recovery time, at least 2 hours at room temperature.

13.1 Drop test

Test Item	Specifications	Condition
Drop test	Weight:50g Diameter:23mm Steel ball High:30cm	Drop on the center of touch panel module and can't break(one time)



14. Standard of appearance inspection

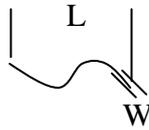
Circular Defects
 Linear Defects
 Scratch
 Air Bubble
 Crack

(1) Circular Defects

$$\phi = (L+W)/2$$

Diameter(mm)	Spec
$\phi \leq 0.2$	No quantity limit
$0.2 < \phi \leq 0.4$	Max 5 defect
$0.4 < \phi$	Reject

(2) Linear Defects



Length	Width	Acceptable
$8.0 \geq L$	$0.06 \geq W$	Accept
$8.0 \geq L$	$0.08 \geq W$	Max 5 defect
$L > 8.0$	$W > 0.08$	Reject

The Min distance of defects must be above 15.0mm.

Y:
 Long breakage

Z:
 Wide breakage

(3) Scratch

Length	Width	Acceptable
$8.0 \geq L$	$0.06 \geq W$	Accept
$8.0 \geq L$	$0.08 \geq W$	Max 5 defect
$L > 12.0$	$W > 0.08$	Reject

The Min distance of defects must be above 15.0mm.

D:
 thickness
 breakage

T:
 single piece of
 glass thickness
 (Touch sensor
 single thickness)

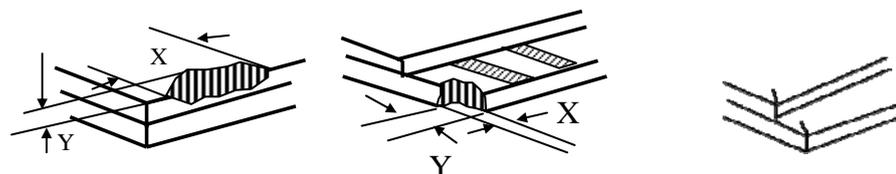
(4) Air Bubble

Diameter(mm)	Spec
$\phi \leq 0.2$	No quantity limit
$0.2 < \phi \leq 0.6$	Max 3 defect

The Min distance of defects must be above 10.0mm.

VA:
 Touch control
 panel viewing
 area.

(5) Crack



$Z \leq T, X \leq 1/8$ Sensor wide

$X \leq 3mm$ and $Y \leq 1/3D$; $X \leq 1mm$

Y: Did not enter the VA

(Accept)

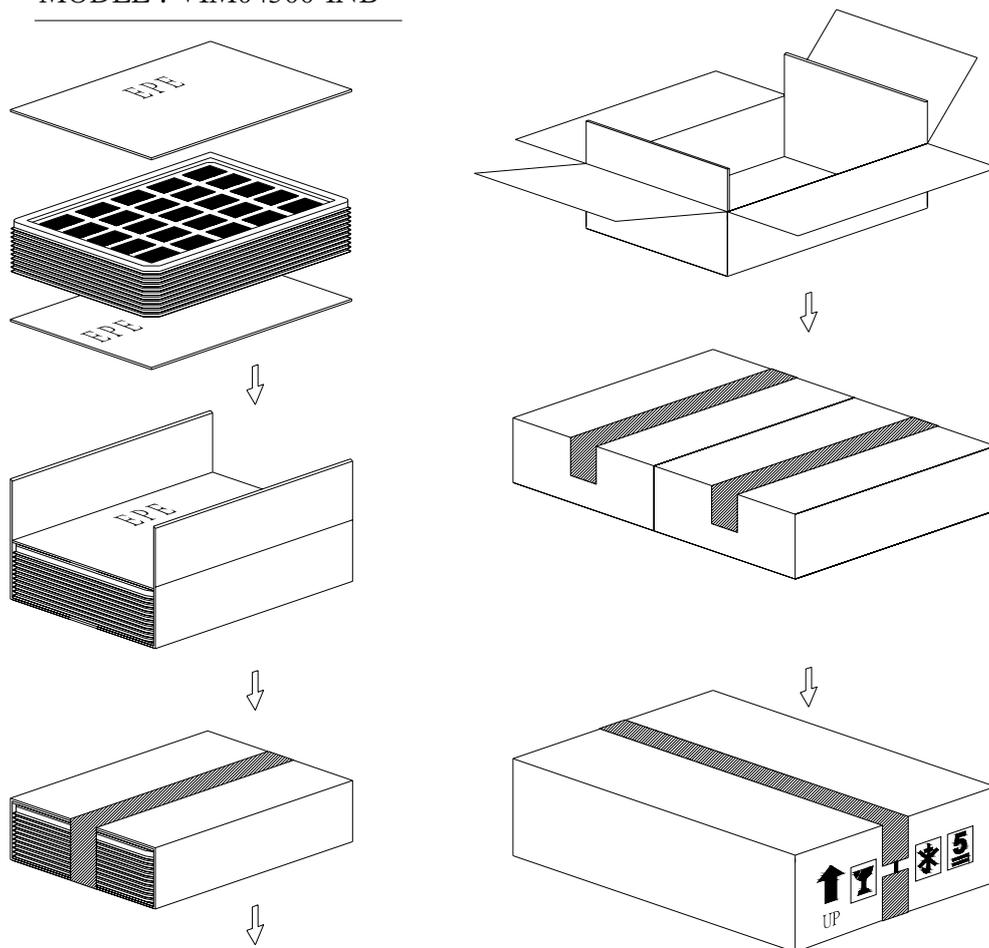
(Accept)

(Reject)

Sensor wide:
 the size of the
 long side of the
 touch panel.

16. Packaging

Packing Method
 CUSTOMER: STD
 MODEL : VIM04300-INB



PARTS LIST					
	ITEM	SIZE(WxHxD) unit:mm	MATERIAL	Q.T.Y	NOTE
1	TRAY	372.0x262.0x11.2	PET	34	
2	CARD BOARD(P1)	925.0x275.0x3.5	CARTON	4	
3	CARD BOARD(P2)	776.0x375.0x3.5	CARTON	4	
4	CARD BOARD(P3)	375.0x265.0x3.5	CARTON	8	
5	INTERNAL BOX(B21)	400.0x290.0x150.0	CARTON	4	
6	EXTERNAL BOX(B1)	600.0x420.0x190.0	CARTON	1	
7	PRODUCT	104.9x66.7x1.55mm		128	