



REG. DATE : 2015.03.16

SPECIFICATION

REV.NO : 1.0

REV. DATE : 2015.03.16

MODEL NAME : TSTD-DR04A

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SPECIFICATIONS FOR APPROVAL

PRODUCT NAME : Touch Sensor Module with Control Board (42")

LGIT MODEL NAME : TSTD-DR04A

Customer P/N :

APPROVAL		
LG Innotek Co., Ltd.		
Drafter	Quality Team Agreement	Final Approver

Appendix

 LG Innotek		DOCUMENT No : 15-TW-
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Change History of Revision

[illegible]



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1. General Description

1-1. General Feature

Item		Spec	Remark
Window Glass	Viewing Area	930.94mm x 524.93mm	View Area 42 inch
	Out Dimension Size	970.7mm x 578.8mm	
	Thickness	5.0mm	
	Material	Sodalime	Thermal Strengthened
	Deco Printing	Black	
	Printing Hole	-	
	AG coating	Yes	Gloss 90~130unit
	Chamfer	C0.8±0.2	
	Protection Film	-	
	Logo	-	
	Silk	-	
Touch Sensor	Type	GFF, 2 mesh sensor(PET)	
	Sensor Size	954.315mm X 555.355mm	
	Thickness	0.365mm	without Protect Film
	Sensing Type	Mutual Capacitance 2 layer	
	Channel No.	Rx(Top) : 135 Tx(Bottom) : 77	Trace single routing
	Protection Film	Yes (0.050t or 0.075t)	
Control Board	Response Time	16ms(TBD)	1~10point 기준 / CH141*78 / Repot rate 240Hz)
	Accuracy	±1.5mm	
	Separation	Min20mm	2-Point간 거리
FPCB	Type	COB Type	
	Connector	ZIF Type	FH30 Series
	Size	Rx : 257.495mm x 100.6mm Tx : 290.845mm x 60mm	
	Layer	Single Layer	

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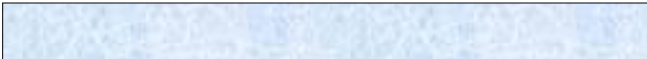
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1. General Description

1-2. Stack up

No	Structure	Feature
1		Window Glass
2		Top OCA
3		Top Sensor
4		Bottom OCA
5		Bottom Sensor



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PAGE : **6****2. Specification****2-1. Electrical Specification(TBD)**

Feature	Judgment
Version Check	OK
Sensor Check	OK
Edge Draw Test	OK
Diagonal Draw Test	OK

2-2. Optical Specification

Feature	Specification
Transmittance (%)	Typ. 83% (Min 81%)
Haze	Typ. 4% (Max 6%)

2-3. Reference LCD Condition

Feature	Specification
Resolution	1920 x 1080 (FHD)
LCD Active Area(Size)	42"

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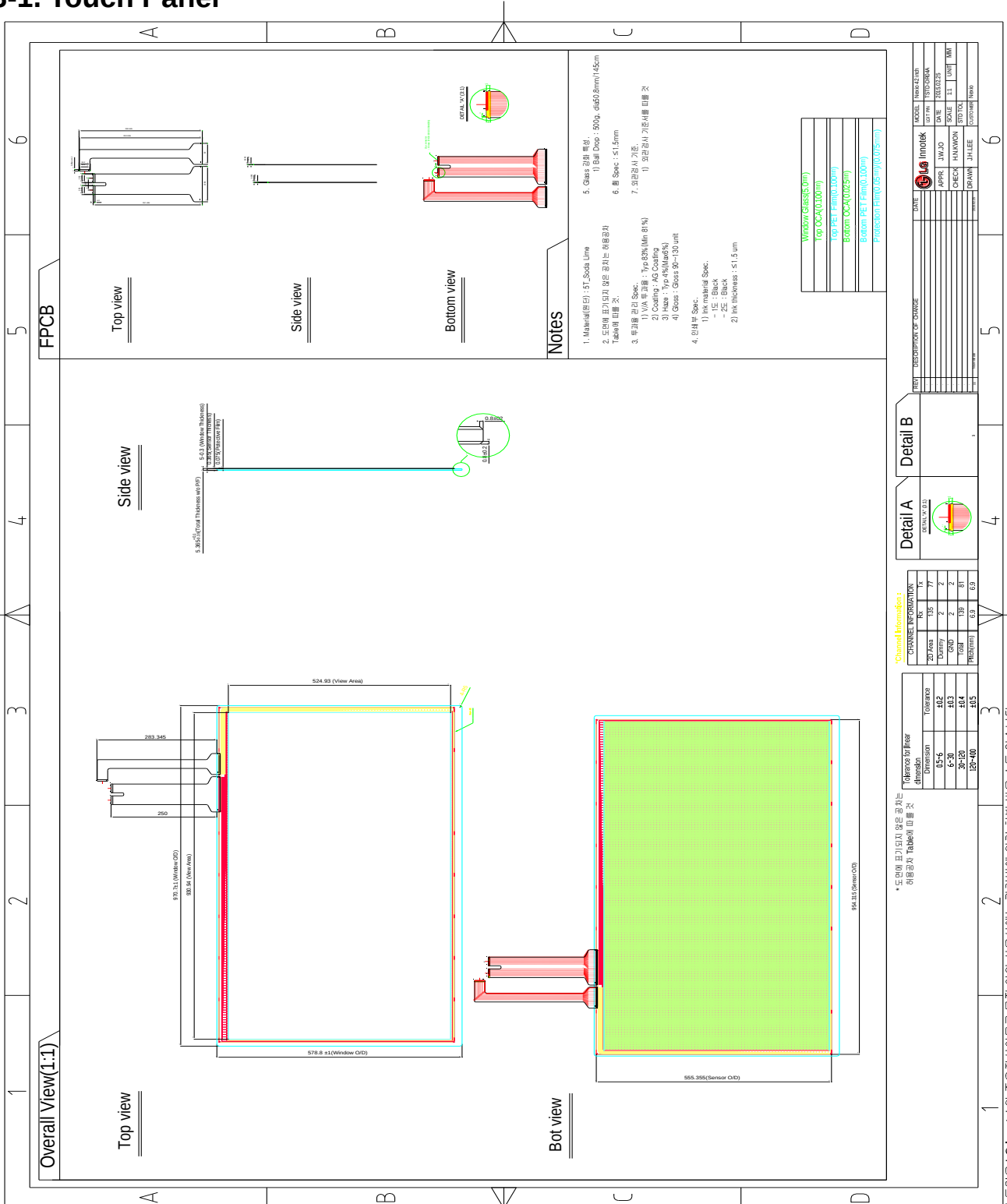
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3. Outline Dimension

3-1. Touch Panel



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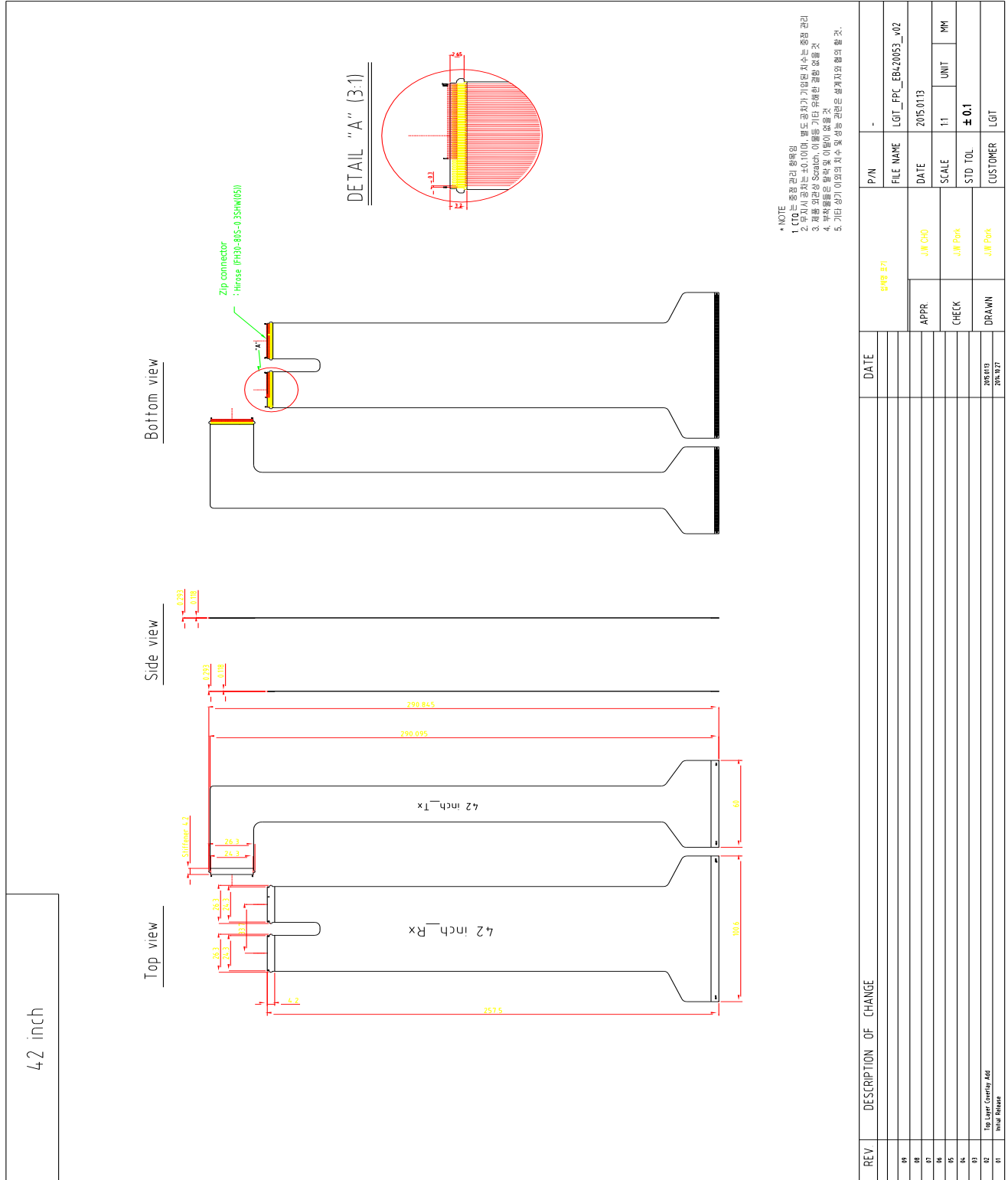
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3. Outline Dimension

3-2. FPCB



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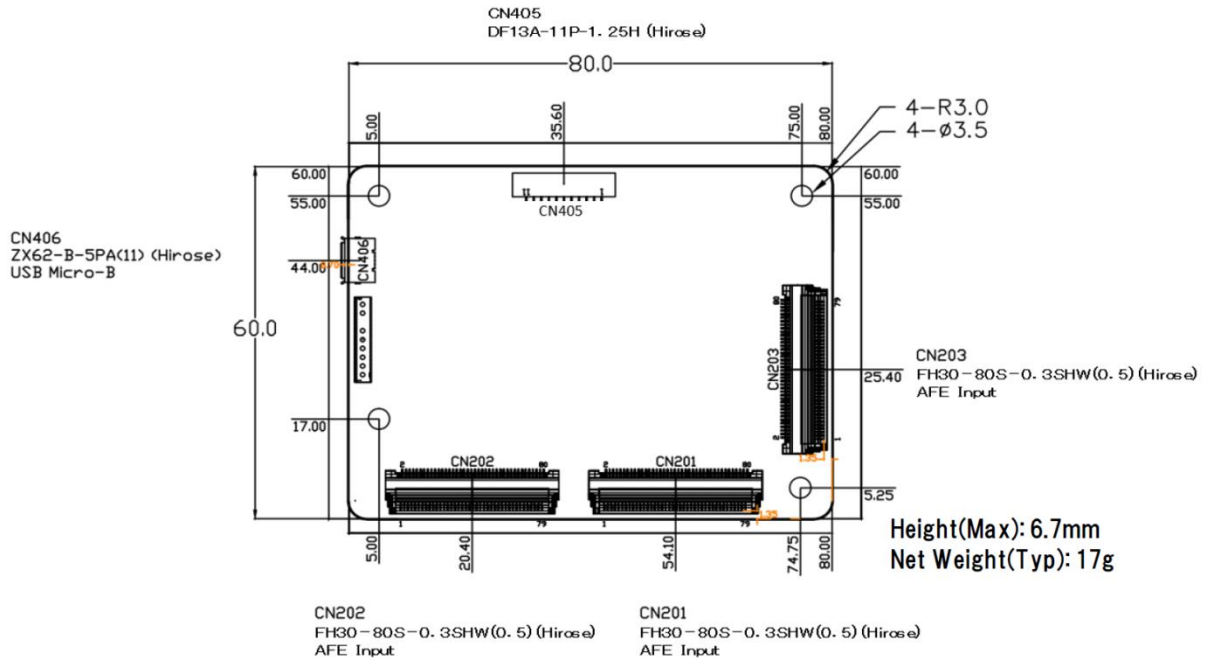
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4. Control Board

4-1. Outline Dimension



Material Construction

unit:mm				
	Material	thickness(Typ)		
solder resist	solder resist	0.020		
L1 Conductor	copper + copper plating	0.035		L1 Conductor
L1-L2 Adhesive	prepreg	0.130		
L2 Conductor	base + copper	0.018		L2 Conductor
L2-L3 base		0.600		
L3 Conductor		0.018		L3 Conductor
L3-L4 Adhesive	prepreg	0.130		
L4 Conductor	copper + copper plating	0.035		L4 Conductor
solder resist	solder resist	0.020		
Final thickness		1.006 ± 10%		

3D view



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4. Control Board

4-2. Reliability

Test Items	Condition	
High Temp Storage	Ta = 70℃	96hrs
Low Temp Storage	Ta = -20℃	96hrs
High Temp & High Humi Storage	Ta = 40℃, 90%RH	96hrs
High Temp Operation	Ta = 50℃	96hrs
High Temp & High Humi Operation	Ta = 40℃, 90%RH	96hrs
Heat Shock	Ta = -20℃ ↔ 70℃ each 30 min	5cycles



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4-3. Sharp Touch controller support OS(via USB)

	OS	Support	Driver	Remark
Windows	Windows 7	√	Windows USB/HID driver	
	Windows 8/8.1	√	Windows USB/HID driver	
Linux	Ubuntu 12.04	√	Linux USB/HID driver	-Kernel version 3.8 or above -Driver configuration might be modified to attach appropriate driver module.
	Ubuntu 13.04	√	Linux USB/HID driver	-Kernel version 3.8 or above -Driver configuration might be modified to attach appropriate driver module.
	Others			Contact us
Android	Gingerbread (2.3)	√	Available with custom HID driver provided by SHARP	
	Ice Cream Sandwich (4.0)	√	Android USB/HID driver	Driver configuration might be modified to attach appropriate driver module.
	Jelly Bean (4.3)	√	Android USB/HID driver	Driver configuration might be modified to attach appropriate driver module.
	KitKat (4.4)	√	Android USB/HID driver	Driver configuration might be modified to attach appropriate driver module.



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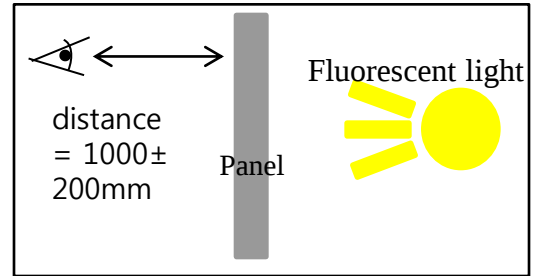
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5. Inspection Standard

5-1. Cosmetic Inspection Condition

- Luminance : 600 ± 200 lux (diffused light source)
- Distance(With the unaided eye) : 1000 ± 200mm
- Light source : D65 (White-6,500K)
- Measurement method : With the unaided eye or the magnifying glass
- Viewing Angle : 90° (vertical)
- Duration : Up to 30 ~ 45sec



5-2. Cosmetic Inspection Standard

Item	Area	Judgment	42inch	Remark
Circular defect ($D = (L + W) / 2$)	Active/Print	Ignore	$D \leq 0.7$ (Ignore distance between defects)	
		OK	$0.7 < D \leq 1.0\text{mm}$: 10e (Distance between Defects 10mm ↑)	
		NG	$D > 1.0\text{mm}$	
Linear defect	Active/Print	Ignore	$W \leq 0.2\text{mm}$ and $L \leq 25\text{mm}$ (Ignore distance between defects)	
		OK	$0.2 < W \leq 0.3\text{mm}$ and $25 < L \leq 50\text{mm}$: 10ea (Distance between Defects 10mm ↑)	
		NG	$W > 0.3\text{mm}$ or $L > 50\text{mm}$	
Circular defect (translucent_반투명) ($D = (L + W) / 2$)	Active/Print	Ignore	$D \leq 0.7$	Including Bubble
		OK	$0.7 < D \leq 1.8\text{mm}$: 10ea	
		NG	$D > 1.8\text{mm}$: NG	
Chipping (Corner, Side)	Print/Edge	OK	$D \leq 0.5\text{mm}$: OK	
		NG	$D > 0.5\text{mm}$: NG	
Dent	Active/Print	OK	정면 검사 시 미시인 (Should not be viewed from the front, during inspection)	
Window Stain	Active/Print		지워지는 얼룩 무시	
Spreading/Ripped off/Scratch	Glass out of edge	OK	L : Ignore, $W \leq 2.0\text{mm}$	
핀 홀	Print	Ignore	$\leq 0.2\text{mm}$	페인트 마카펜 재생 허용 변질 튼김
		OK	$0.2\text{mm} < \text{Pin hole} \leq 0.6\text{mm}$: 13pcs (결점간 거리 10mm 이상)	
		NG	$> 0.6\text{mm}$	
Protect film			Protect film defect Ignore	



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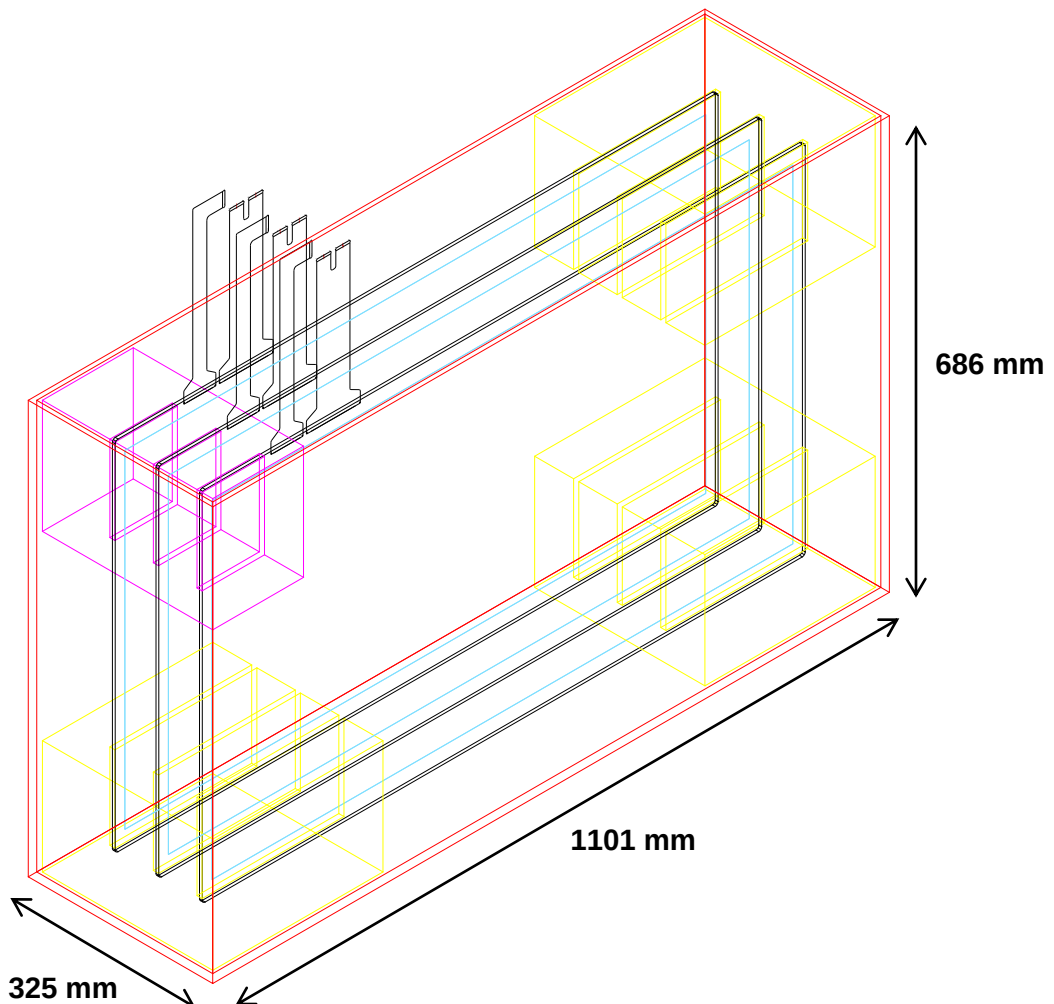
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6. Packing

Packing Information

- Box Size : 1101 x 325 x 686mm
- PE Form : 4pcs / 1-Box
- 3pcs / 1 Box



< Package Dimension >



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Cautions & Warranty

⚠ Please pay attention to the following when you use this Touch Sensor Panel.

1) Storage

When storing the TSP(Touch Sensor Panel)s as spares for a long time, the following precautions are necessary.

- Store the TSPs in a dark place. Do not expose the TSPs to sunlight. Keep the temperature between 5℃ and 30℃ at normal humidity.

2) Protection Film

- When the protection film is peeled off, static electricity is generated between the protection film and the TSP's transparent electrical film(Ag Mesh PET film). This should be peeled off slowly and carefully by people who are electrically grounded and the well ion-blower equipment or in such a condition, etc.
- When the TSP with protection film attached is stored for a long time, sometimes there remains a small amount of glue still on the TSP's transparent electrical film(Ag Mesh PET film) after the protection film is peeled off.
- You can remove the glue easily. When the glue remains on the TSP's transparent electrical film(Ag Mesh PET film) surface or its vestige is recognized, please wipe them off with absorbent cotton waste or other soft material like chamois soaked with ethyl-acetate.

3) Electrostatic Discharge Control

- Since the TSP is composed of electronic circuits, it is not strong to electrostatic discharge. Make certain that treatment persons are connected to ground through wrist band etc.

4) Installing and Assembling

- Do not touch, push or rub the exposed TSP's film with glass, tweezers or anything harder than 3H pencil lead. And please do not rub with dust clothes with chemical treatment. Do not touch the surface of film for bare hand or greasy cloth. (Some cosmetics deteriorate the film.)
- When the surface becomes dusty, please wipe gently with absorbent cotton or other soft material like chamois soaked with ethyl-acetate. Do not use acetone and toluene.
- Do not put a heavy, hard or sharp objects on the TSP.
- Do not apply excessive forces to the FPCB.



Warranty

Touch Sensor Panel products shall be warranted for one year after shipping from LG Innotek Co. Ltd.
(Storage condition : Between 5℃ and 30℃ at normal humidity)

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