

SPK ELECTRONICS CO., LTD.

Touchscreen Specification

Model : TR4-170F-07N (80F4-4185-H0070)
Version : V 1.0
Date : March 17, 2006

Version	Revise Date	Content	Remark
V1.0	2006/03/17	Initial (ROHS/new tail)	

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1. FEATURES

General	Touch Panel for 17 inches LCD display
Touch Panel	Four Wire Resistive Touch Panel
ROHS Compliance	Yes

2. TOUCH PANEL SPECIFICATIONS :

2.1 FEATURES

Type	Four-Wire Analog Resistive Touch Panel		
Structure	Material	Thickness	Type
	ITO/PET x1	188um	Non-Glare
	ITO GLASS	1.85mm	Normal type
Input Mode	Stylus or Finger		
Connector	FPC		

2.2 GENERAL SPECIFICATION

Item		Specification (unit in mm except as noted)
(1)	Frame Size	356.00 ±0.30 * 286.50 ±0.30
(2)	View Area	343.00 ±0.20 * 275.50 ±0.20
(3)	Active Area	337.00 ±0.20 * 269.500 ±0.20
(4)	Total Thickness	2.10 ±0.20
(5)	Tail Length	80.00 ±2.00

Note: Refer to Appendix-3 for details

2.3 ENVIRONMENTAL CHARACTERISTICS

Status		Temperature	Humidity (No Condensation)
(1)	Operation	0°C ~ +50°C	20% — 85%RH
(2)	Storage	-20°C ~ +70°C	10% — 90%RH

Note: The environment is of normal atmosphere pressure.

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2.4 OPTICAL CHARACTERISTICS

Item		Specification
(1)	Transparency	$\geq 78\%$ @wave length 550nm
(2)	Newton Ring	As per actual samples provided

Note: Transparency and Haze is measured by using BYK-Gardner instrument.

2.5 ELECTRICAL CHARACTERISTICS

Item		Specification
(1)	Terminal Resistance	Up : 200~800 Ω , Down : 100~500 Ω
(2)	Linearity	X axis $\leq 1.5\%$, Y axis $\leq 1.5\%$
(3)	Chattering	$\leq 30\text{ms}$
(4)	Insulation	$\geq 20\text{M}\Omega/25\text{V(DC)}$
(5)	Endurance	No arcing damage at DC 25V/60sec.
(6)	Operative Resistance	$\leq 2\text{K}\Omega$

2.6 MECHANICAL CHARACTERISTICS

Item		Condition	Specification
(1)	Operation Force	Stylus=R0.8	$\leq 50\text{g}$
(2)	Impact	22 ϕ DIA. Steel Ball/45g Height=30cm	1 time, no damage (Impact at center area)
(3)	Static Load	25kg at ϕ 10 mm area for 30 Sec	Satisfy (1),(2),(4) Of Item 2.5 and (1) of Item 2.6
(4)	Hardness	3H pencil, pressure 1n/45°(JIS K5400)	$\geq 3\text{H}$
(5)	Peeling	800g/cm by 90 degree	Satisfy (1) Of Item 2.5
(6)	Bending	10 times by radius R:1mm 500g left & right 135 degree	Satisfy (1) Of Item 2.5

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2.7 RELIABILITY

Item		Condition	Specification
(1)	Constant Temperature / Humidity	60°C/90%RH ,120 hrs and normalized for 4 hrs	Satisfy (1),(2), of Item 2.4; (1),(2),(4) Of Item 2.5; (1) of Item 2.6
(2)	Heat Cycle	70°C/120 hrs and normalized for 4 hrs	Same as above
(3)	Cold Cycle	-20°C/120 hrs and normalized for 4 hrs	Same as above
(4)	Thermal Cycle	-20°C~+70°C (0.5hr each), 10 Cycles (within 24 hr) and normalized for 4 hrs	Same as above

2.8 DURABILITY

Item		Condition	Specification
(1)	Write Test	100,000 times, Force 250g, R0.8	Satisfy (1),(2),(4) of Item 2.5; (1) of
(2)	Knock Test	1,000,000 times, Force 250g, 3HZ, R8/HS60	Same as above

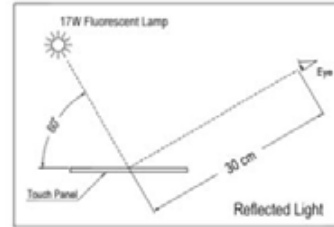
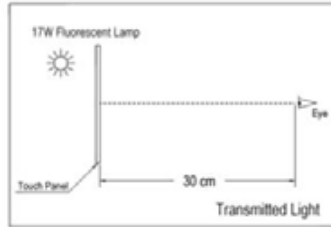
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【Appendix-1】

Appearance Inspection and Specification for Touch Panel

Appearance Inspection

- (1) The flaws and impurities are allowed outside viewing area except for those affecting electrical functions.
- (2) The inspection shall be performed by using one 17w fluorescent lamp as back or side light. The panel shall be placed at 30cm away from eyes(as illustrated in the followings).



- (3) Glass flaw

Corner flaw		$X \leq 3.0\text{mm}$ $Y \leq 3.0\text{mm}$ $Z \leq T$
Edge flaw		$X \leq 3.0\text{mm}$ $Y \leq 3.0\text{mm}$ $Z \leq T$
Progressive flaw		None allowed

T=Glass thickness

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(4) Specification for other items

Unit : mm

Particle	(1) Diameter ≤ 0.25 (each area contains ≤ 3 particles, total ≤ 5 particles) \rightarrow OK (2) $0.25 < \text{Diameter} \leq 0.4$ (each area contains ≤ 3 particles, total ≤ 5 particles) \rightarrow OK (3) Diameter > 0.4 \rightarrow NG
Blur Stain	(1) Diameter ≤ 0.25 (each area contains ≤ 3 particles, total ≤ 5 particles) \rightarrow OK (2) $0.25 < \text{Diameter} \leq 0.4$ (each area contains ≤ 3 particles, total ≤ 5 particles) \rightarrow OK (3) Diameter > 0.4 \rightarrow NG
Linear Object	(1) Width ≤ 0.05 and Length ≤ 12 \rightarrow OK (2) $0.05 < \text{Width} \leq 0.1$ and Length ≤ 5 , total ≤ 3 objects \rightarrow OK (3) Width > 0.1 and Length > 0.2 \rightarrow NG (4) Curled objects are regarded as particles
Blister	(1) As per actual samples provided
Fish Eye (Spread White Spots)	(1) Diameter ≤ 0.5 \rightarrow OK (2) Diameter > 0.5 \rightarrow NG (3) Each area contains ≤ 3 spots, total ≤ 5 spots \rightarrow OK
Newton Ring	(1) As per actual samples provided
Color Tone	(1) As per actual samples provided
Scratch	(1) $0.05 < \text{Width} \leq 0.1$ and Length ≤ 12 , total ≤ 5 scratches \rightarrow OK (2) Width > 0.1 or Length > 12 \rightarrow NG
Interference Pattern	(1) Inspection according to the standard testing methods
Damages to Glass A. Corner B. Edges	(1) Length ≤ 2 , Width ≤ 2 , Depth $\leq 1/3T$, Total ≤ 2 damages \rightarrow OK (2) Damages with possible worsening disallowed

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【Appendix-2】

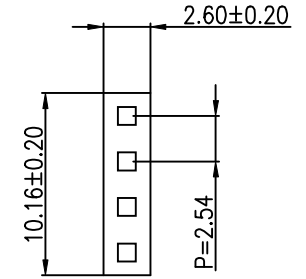
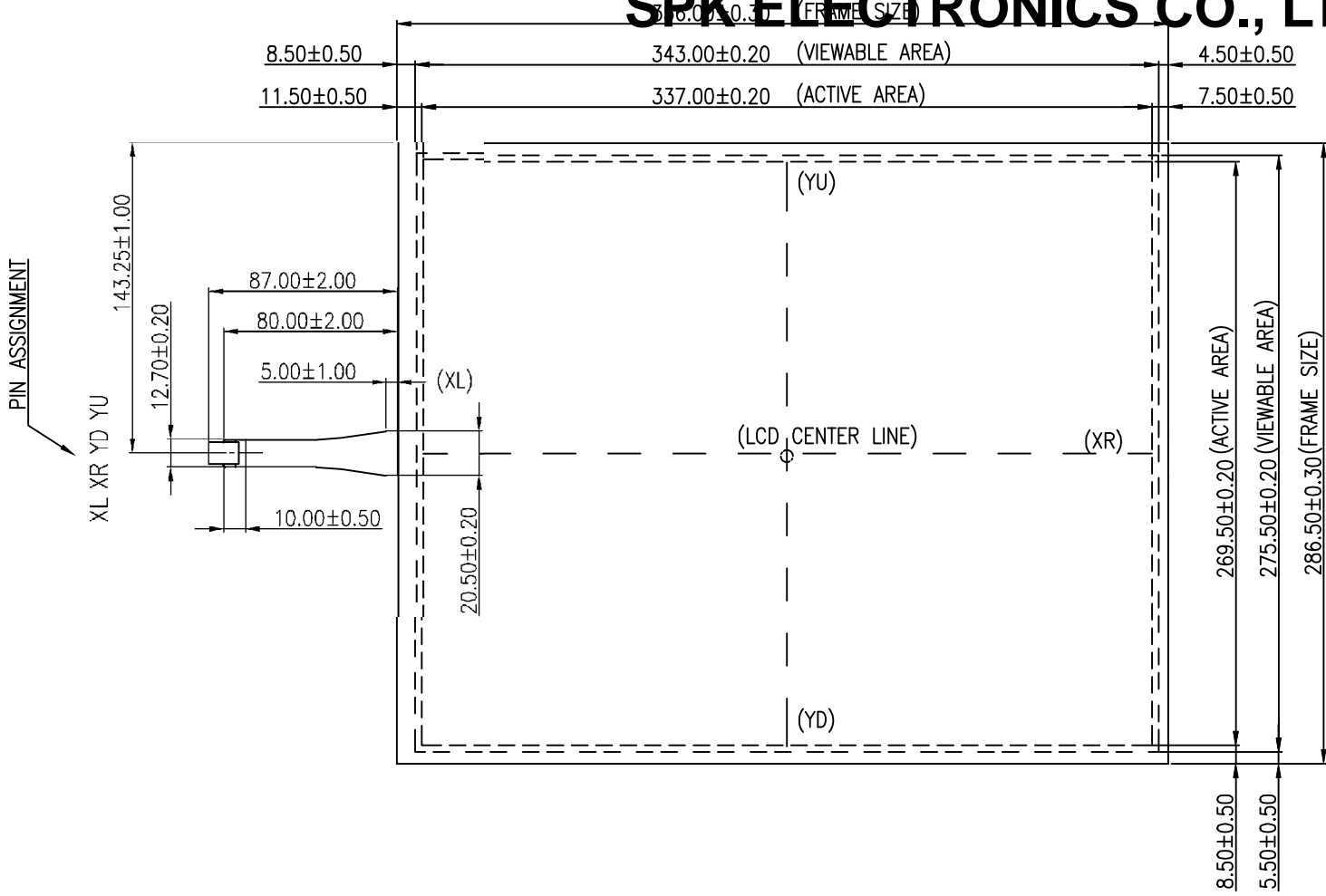
Cautions For Touch Panel

Storage	(1) Store packaged products at the temperature and humidity mentioned in the specification with care. Do not expose products to direct sunlight or stress such as that caused by piling.
Unpacking	(1) Check for the correct vertical direction of the package before unpacking.
Handling	(1) Clean finger sacks or gloves and mask are required during handing to prevent finger-prints or stain on the products and damages to the products caused by sharp edges. (2) Do not handle the viewing area of the panel. (3) Do not handle the panel at the tail (connector) to prevent detachment of the tail to the panel.
Cleaning	(1) Clean and soft clothes with neutral detergent or with ethanol may be used for cleaning. (2) Do not use any chemical solvent, acidic or alkali solution. (3) Do not allow liquid from soaking into the joint of film and glass which may result in peeling or malfunctioning.
Installing and Assembling	(1) Excessive force or strain to the panel or the tail is prohibited. (2) Provide a clearance of at least 0.3mm between panel and display module (3) The panel is designed with air groove. Insulation and cushioning pads should be designed around the edges of the panel to prevent liquid penetration or dust gathering.
Operating	(1) Operate with a stylus (tip R0.8 or over), or with a finger without applying excessive load. Sharp edged or hard articles are prohibited. (2) The gathering of dew in the panel may occur with abrupt temperature or humidity changes. A stable environment condition is recommended.
Others	(1) Keep the surface clean. No adhesives should be applied. (2) Avoid high voltage and static charge.

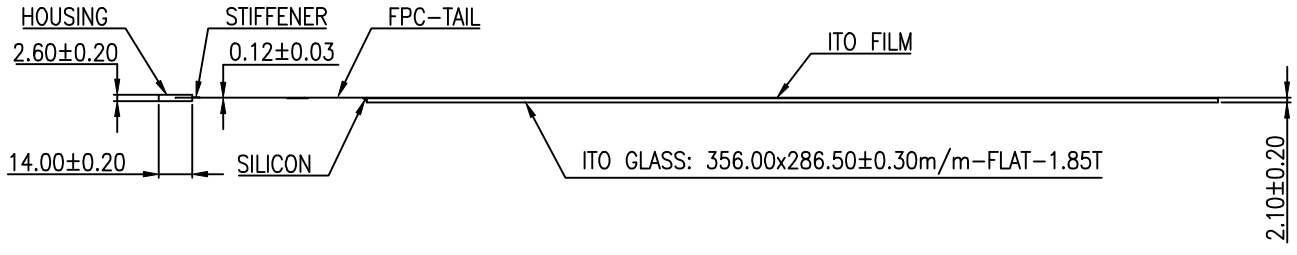
【Appendix-3】

Engineering Drawing

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HOUSING



ITEM NO.	TR4-170F-07		
TOUCH PANEL DIMENSION FOR LCD 17.0 INCH			
DWC NO	Γ4-17007	PCV	I
APPROV		006 01 19	JNIT /
CHECK		SCALE	
DESIGN		TOL	XX
DPAW		SHI I T	1 0 I 1