

REVISION HISTORY

REV	DESCRIPTION	DATE	APPROVAL
A	Preliminary Release	14 Nov. 2008	Jim Lee

LEVEL OF PURCHASE	APPRV'D BY	DATE
RECORD AND FILE		
PRELIMINARY		
FINAL		

		DATE	<p style="text-align: center;">INSYNC Peripherals Corporation 22951 La Cadena Dr. Laguna Hills, CA 92653 Tel: 949-588-2675; Fax: 949-588-2679 Email: info@insyncperipherals.com</p> <p style="text-align: center;">4-Wire Touch Panel Series (Product Specification)</p>
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4-Wire Touch Panel Series Product Specification

ORIGINATOR

DATE

SYSTEM ENGINEER

DATE

ENGINEERING PROGRAM MGR

DATE

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1.0 SCOPE

This specification establishes the performance and test requirements for a series of 4-wire resistive touch panels. These touch panels are film-on-glass structure incorporated with proprietary optical manufacturing process to provide maximum light transmission and low reflection. They feature single angle reflection for superior optical clarity. These touch panels are developed specifically for outdoor handheld and mobile equipment. When optically bonded onto display panels, they are ideal for viewing in direct sunlight.

2.0 APPLICABLE DOCUMENTS

The following documents, of the exact issue shown, form a part of this specification to the extent specified herein. In the event of a conflict between the documents referenced herein and the contents of this specification, the contents of this specification shall have precedence.

- ANSI / IPC-A-610 Acceptability for Electronic Assemblies
- ANSI / IPC-A-620 Requirements and Acceptance for Cable and Wire Harness Assemblies
- IPC DOCUMENTS TBD

3.0 REQUIREMENTS

These touch panels are designed in accordance with this specification, including requirements covering all operating and non-operating conditions. The touch panels shall meet performance and all other requirements of this specification while installed in the intended equipment, provided the environment is no more severe than that specified herein.

3.1 PRODUCT DEFINITION

The touch panel series shall include the following.

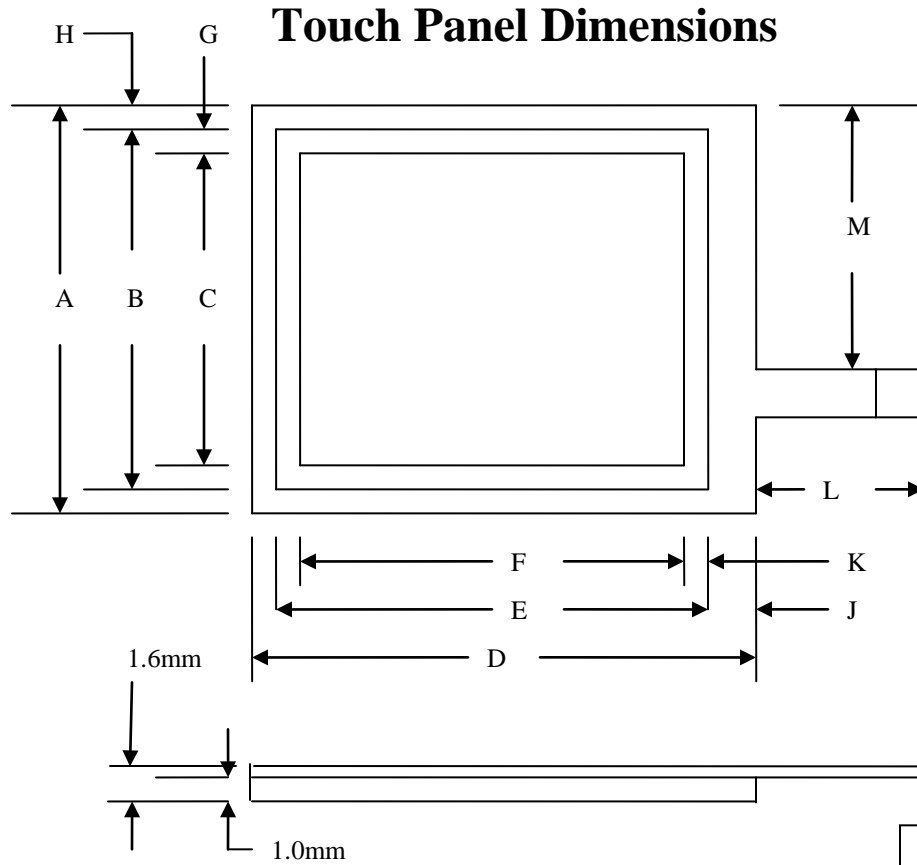
- a. 4-Wire touch panel
- b. Touch Panel Controller (optional)
- c. USB with cable for communication interface (optional)
- d. Cable connecting between touch panel and controller (optional).

See Figure on page 5 for touch panel dimensions.

4.0 SPECIFICATION

- 4.1 Surface: 3H
- 4.2 Optical Clarity: 94% typical
- 4.3 Operating Temperature: -10C to +60C
- 4.4 Non-operating Temperature: -20C to +70C
- 4.5 Durability: over one million touches
- 4.6 Operating Voltage: +5VDC
- 4.7 Resistance: 200 ohms to 900 ohms
- 4.8 Linearity: better than 1.5%
- 4.9 Faceplate Surface: Smooth surface for single angle reflection (Anti-glare or anti-reflection coating is optional)
- 4.10 Operating Pressure: 70 gm typical
- 4.11 Altitude: 10,000 ft.
- 4.12 Message Noise: 5mS - 15mS
- 4.13 Operating Current 5mA – 25mA
- 4.14 Isolation resistance: Greater than 20M Ohms at 25VDC.
- 4.15 Impact Resistance: No damage when a 9mm diameter steel ball is dropped from a distance of 30CM height, one time. The touch panel is laid on top of a flat surface table.

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A, D= Touch Panel Area
 B, E= Viewing Area
 C, F= Active Area

Part Number	A	B	C	D	E	F	G	H	J	K	L	M
TP-057-228	104.2mm		87.4mm	144.5mm		115.1mm					63.5mm	75mm

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- 6.0 INSPECTION
- 6.1 Inspection Condition
- 6.1.1 Backlight Brightness: 500nits
- 6.1.2 Viewing distance using naked eyes: 30 CM
- 6.1.3 Inspection angles: within +/-30 degrees from normal
- 6.1.4 Viewing condition: 200 nit standard office lighting.

6.2 Inspection Standard

6.2.1 Area of inspection: Active area expect spacer dot

6.2.1.1	Spot	< 0.5mm	Accept;	> 0.5mm	Reject
6.2.1.2	Rub	<1.0mm	Accept;	> 1.0mm	Reject
6.2.1.3	Edge warp	<0.5mm	Accept;	>0.5mm	Reject
6.2.1.4	Lines (note 1)	<0.15mm	Accept;	>0.2mm	Reject

Note 1. Length=L; Width=W; L<10mm and 0.15mm<0.2mm
One line is allowable; two lines are reject.

- 6.3 Quality Inspection Standard
- 6.3.1 Inspection Criteria is based on Military Standard Mil-Std-105D.
- 6.3.2 Lot Size: 91 to 150
- 6.3.3 General Inspection Level: Level 1
- 6.3.4 AQL: 1.0
- 6.3.5 Sampling Plan: Single
- 6.3.6 Inspection: Normal
- 6.3.7 Sample Size: 8
- 6.3.8 AC=0; Re=1

7.0 RELIABILITY

7.1 FAILURE REPORTING ANALYSIS AND CORRECTIVE ACTION

IPC shall identify the root cause and corrective action of any touch panel failures that occur during the manufacture, test and deployment of the display. IPC shall provide individual failure analysis for each display returned to IPC as a result of a failure in the intended equipment. These analysis will list the symptoms of the failure, the root cause of the failure and the corrective action taken to prevent any reoccurrence.

8.0 QUALITY ASSURANCE PROVISIONS

8.1 GENERAL

The requirements for the formal verification of the performance, design, and construction of the display shall be as specified in this section. The product must demonstrate its adequacy to meet the design/performance requirements of Section 4. Verification of each requirement shall be designated for accomplishment by analysis, inspection, demonstration or test, or combinations of these as specified herein. Verification methods are established as follows:

Test: An examination or trial which yields analytical data for use in comparing the measured performance with the specified requirement. Included are accept/reject criteria for comparison of test results with design requirements.

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8.2 **RESPONSIBILITY**

Unless otherwise specified IPC is responsible for the performance of all verifications as specified herein. IPC may use its own or any other facilities suitable for the performance of tests and other verifications specified herein, unless disapproved by user. IPC reserves the right to perform any of the tests and other verifications set forth in the specification where such tests or verifications are deemed necessary to assure supplies and conform to prescribed requirements. IPC shall correct any design, material, or performance defect made evident during these tests.

8.3 **EXAMINATION OF PRODUCT**

Each touch panel shall be carefully examined to determine conformance to the requirements of this specification. Particular attention shall be given to workmanship, finish, dimensions, construction, cleanliness, identification and marking.

9.0 **PREPARATION FOR DELIVERY**

9.1 **GENERAL**

The touch panel shall be cleaned, preserved, packed, packaged, labeled, and marked in accordance with industry's standard commercial practices to protect from contamination and damage. The methods for cleaning, preserving, packing, packaging, labeling, and marking shall be subject to approval by the Buyer if it is specified in the Purchase Order.

9.2 **MARKING**

All parts and assemblies which require special care during packing, handling, or shipping shall be identified and marked appropriately. The touch panel shall be marked with at least the following information in such a manner that the marking will not be rendered illegible:

- InSync Part Number
- Customer Part Number if requested
- Date Code

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