A Touch Technologies Co., Ltd.

Specification of Surface Acoustic Wave
RS-232 Control Board

Model : SAW232
A. Application

This specification applies to the following RS-232 Control Board for Surface Acoustic Wave Touch Panel.

B. Environmental Conditions

1. Operating Temperature Range
   0°C ~ 65°C

2. Operating Humidity Range
   10%~90% RH (no dew falls)

3. Storage Temperature Range
   -25°C ~ 85°C

4. Storage Humidity Range
   10%~90% RH (no dew falls)

5. Operating Altitude
   10,000 feet (3048m)

6. Shock and Vibration
   Three axis sine wave, 50 Hz to 2kHz, 1G, 2 minutes / Octave with dwell on resonances.

7. Flammability
   The PCB substrate and all plastic components, such as headers and connectors are rated UL 94 V0.

C. Electrical Characteristics

1. Supply Voltage
   +5VDC (+4.75V to +5.25V)

2. Supply Current
   85 mA, typical at +5V DC
   Max. current : 150 mA

3. Electrostatic Protection
   Per EN 61000-4-2, 1995 : Meets Level 4
   (15 kV air / 8 kV contact discharges)
4. **Interface**  
Serial RS-232. 8 Data Bits, 1 Stop Bit, No Parity, Full Duplex  
Hardware handshaking: RTS / CTS

5. **Baud Rate**  
9600

6. **Touch Resolution**  
4096 x 4096, size independent

7. **Conversion Time**  
Approximately 15 ms per coordinate set

8. **Reliability**  
MTBF greater than 300,000 hours  
per MIL-HDBK-217-F2 using the part stress calculation method for ground benign environment with an ambient temperature of 25°C

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**D. Mechanical Characteristics**

1. **Construction**  
Four-layer surface-mount design with internal ground plane for EMI suppression.

2. **Dimensions**  
PCB 87.5 x 56 x 11.1 mm  
Refer to Appendix A

3. **Standard Cables, Connectors and Pin Definitions**  
- Standard external RS-232 cable connecting the SAW serial controller with the computer serial port: Refer to Appendix B.

- Serial connector: P2  
  2.0 pitch 5 pin connector on board for connection with RS-232 port.  
  Refer to Appendix A

- Power connector: P3  
  1x2 header with pins on 2.54mm centers.  
  Refer to Appendix A
• Touchscreen connector : P4
A dual row by six position header with 0.635 mm square pins spaced on 2.54 centers for connection with touch panel.
Refer to Appendix A

E. LED Diagnostic Characteristics

A green LED indicates controller status as follows:

<table>
<thead>
<tr>
<th>Action and Condition</th>
<th>LED status</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>The control board is connected with host, not touch panel yet.</td>
<td>Light continuously</td>
<td>The control board is in normal condition.</td>
</tr>
<tr>
<td>No touch</td>
<td>Snuff out</td>
<td>Untouched state</td>
</tr>
<tr>
<td>Touch</td>
<td>Light</td>
<td>Touched state</td>
</tr>
</tbody>
</table>

F. Software Driver

Under Windows : Mouse emulation
Support Operating System
• Microsoft Windows NT4.0/XP/2000/ME/98/95
• Linux : Red Hat 9.0, Mandrake 10.0, SuSE9.2,
  Fedora Core I &II & III, Yellow Dog 3. x
• MS-DOS
Appendix A  Dimension Drawing and Pin Definitions of Connectors

CONNECTOR P2

<table>
<thead>
<tr>
<th>PIN #</th>
<th>SIGNAL NAME</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>+5V</td>
</tr>
<tr>
<td>2</td>
<td>RXD</td>
</tr>
<tr>
<td>3</td>
<td>CTS</td>
</tr>
<tr>
<td>4</td>
<td>TXD</td>
</tr>
<tr>
<td>5</td>
<td>GND</td>
</tr>
</tbody>
</table>

CONNECTOR P3

<table>
<thead>
<tr>
<th>PIN #</th>
<th>SIGNAL NAME</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>+5V</td>
</tr>
<tr>
<td>2</td>
<td>GND</td>
</tr>
</tbody>
</table>

CONNECTOR P4 (SENSOR)

<table>
<thead>
<tr>
<th>PIN #</th>
<th>SIGNAL NAME</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>GND</td>
</tr>
<tr>
<td>2</td>
<td>NC</td>
</tr>
<tr>
<td>3</td>
<td>Y-R</td>
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<tr>
<td>4</td>
<td>Y-T</td>
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<td>5</td>
<td>GND</td>
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<tr>
<td>6</td>
<td>GND</td>
</tr>
<tr>
<td>7</td>
<td>GND</td>
</tr>
<tr>
<td>8</td>
<td>X-R</td>
</tr>
<tr>
<td>9</td>
<td>X-R</td>
</tr>
<tr>
<td>10</td>
<td>X-T</td>
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<td>11</td>
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<tr>
<td>12</td>
<td>NC</td>
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