A Touch Technologies Co., Ltd.

Specification of Surface Acoustic Wave
USB Control Board

Model : SAWUSB
A. Application

This specification applies to the following USB 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**  
   USB 1.1  
   Plug and play compatible

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

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

7. **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

**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 USB cable connecting the SAW USB controller with  
     the computer USB port: Refer to Appendix B  
   - USB Output Connector: P2  
     2.0 pitch 4 pin connector on board for connection with USB port.  
     Refer to Appendix A  
   - Touchscreen Connector: P3  
     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 &amp; 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 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
Appendix A Dimension Drawing and Pin Definitions of Connectors

<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>D-</td>
</tr>
<tr>
<td>3</td>
<td>D+</td>
</tr>
<tr>
<td>4</td>
<td>+5V</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PIN #</th>
<th>SIGNAL NAME</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
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<tr>
<td>2</td>
<td>Y-R</td>
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<tr>
<td>3</td>
<td>Y-T</td>
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<tr>
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<tr>
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</tr>
<tr>
<td>10</td>
<td>X-T</td>
</tr>
<tr>
<td>11</td>
<td>NC</td>
</tr>
</tbody>
</table>

CONNECTOR P2

CONNECTOR P3 (SENSOR)

P2

P3
Appendix B: Standard External USB Cable

MATERIAL LIST:

CORE:
UL2464 #26-4C+AE OD:5.0mm COLOR:BLACK

CABLE:
C2:USB A MALE PVC MOLDED COLOR:BLACK
C1:2.0 Pitch 4Pin Housing 4Pin COLOR:BLACK

CONNECTOR:

PIN ASSEMBLY:

1:2.5x6.0mm PVC Molded Color:BLACK

TABLE:

<table>
<thead>
<tr>
<th>BLACK</th>
<th>4</th>
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</thead>
<tbody>
<tr>
<td>GREEN</td>
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</tr>
<tr>
<td>WHITE</td>
<td>2</td>
</tr>
<tr>
<td>RED</td>
<td>1</td>
</tr>
<tr>
<td>+5V</td>
<td>4</td>
</tr>
<tr>
<td>C2</td>
<td></td>
</tr>
<tr>
<td>C1</td>
<td></td>
</tr>
</tbody>
</table>

1840±10
25±3
10±2