

>> SWITCH SENSOR TEX Sample 01

Technical Description

Confidential
V1.0



Table of Contents

1. Introduction 3

2. Sample characteristics & Technical Data: 4

3. Applications..... 5

4. Maintenance and Operating Instructions..... 6

5. Legal Note..... 7

1. Introduction

Textile keyboards: Flexible, highly portable and washable!

Convert any fabric or textile backing into a keyboard with **Switch Sensor Tex**. Incorporate keypad control functionality directly into sports fabric, car interior upholstery or stand-alone textile keyboards which can be connected to laptops, tablets and other handheld devices.



Product

Switch Sensor Tex is an innovative product based on a patented technology which uses electrically conductive inks printed onto textile backings.

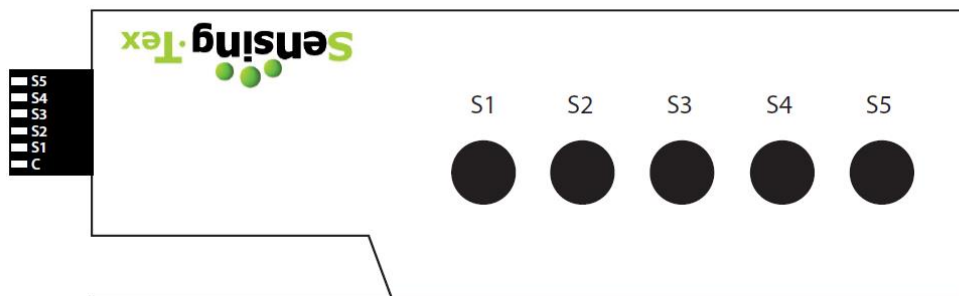
The product consists of an area of fabric with resistive switches distributed across its surface. The number, size and distribution of switches are completely flexible, allowing any type of keyboard or control pad to be defined. The result is fabric which allows keyboard functionality whilst retaining its textile properties: Flexibility, washable, elastic etc.

2. Sample characteristics & Technical Data:

Switch Sensor Tex allows the x-y positions of points of low pressure points, acting on the surface of the fabric, to be determined (switch functionality). The sensor is composed of a sequence of elements: one or two layers are used to detect position (coordinates x-y) and the third layer is used to establish the minimum pressure that must be applied in order to activate the detection.

This sample has the following characteristics:

Textile Element: Textile Keypad. **Textile backing:** PES. **Size:** 146x45 mm.
Sensor Elements: 5 sensor elements, Size 8 mm in diameter, **Disposition:** Linear. **Size of the sensor element:** 8 mm. **Connector:** Flat connector 6 ways 2,54mm pitch



Property	Unit	Value
Operating Conditions		
Temperature Range (¹)	[°C]	-15 – 90
Relative Humidity Range	[%]	0-100
Repetitions (lifespan)	#	>10 ⁸
Minimum Pressure to Activate	[N/cm ²]	0,2 -3 (²)
Physical Characteristics		
Minimum Sensor Thickness	[µm]	400
Minimum Resolution	[mm]	1,5
Electrical Characteristics		
Dynamic Response Time Rising	[ms]	10
Dynamic Response Time Falling	[ms]	60
Contact Resistance	[Ω]	Ω Level
Sensitivity Error (0,2-0,5N)	[%]	0,2

Table 1: Technical properties x-y position detection layer

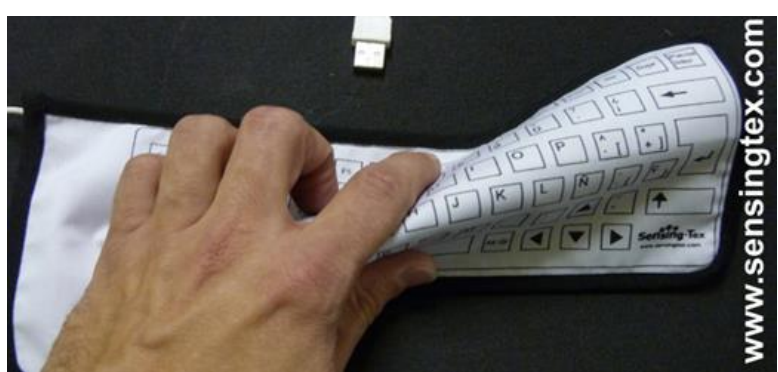
¹ Tested in the laboratory. The range of measurements described should not be considered as a limit,

² Depending on isolating textile used, minimum pressure level can be controlled.

3. Applications

Switch Sensor Tex allows the development of products which can locate x-y positions in a flexible, thin, lightweight surface, which can be adapted to different shapes and designs. The button/switch points can be customized in size, shape and distribution. These features make Switch Sensor Tex ideal for integration in countless applications such as control of electronic devices, PDAs, MP3s, PCs and integration into electronically adjustable car seats, curtains, blinds, doors, etc.

Separate Cloth Keyboards:



Clothing Integrated Keypads:



Customized development of specific keypad layouts with Switch Sensor Tex

Sensing Tex offers the possibility to develop and customize the Switch Sensor Technology under the specifications given by the customer.

Can be customized:

- Size and position of the buttons.
- Position of the connector. May be placed at one end of the keyboard or lengthen with a textile connecting strip.
- Thickness, flexibility and elasticity customizable.
- Connector customizable.

Other features:

- Specifically designed to prevent inadvertent operation due to bending of the keypad (for example, when we roll up the sleeve if the keypad is placed in this position).
- Specifically designed for activation on soft surfaces. (Soft spots on the skin, on foam fabric, etc).

4. Maintenance and Operating Instructions

Maintenance of Switch Sensor Tex:

- Switch Sensor Tex fabric is as fast as any other synthetic fabric.
- Switch Sensor Tex Fabric fabric can be folded and creased as any other fabric.
- Switch Sensor Tex Fabric can be gently machine washed with water up to 30°C and natural soap.



5. Legal Note

Sensing Tex commercialized products require a careful handling according the provided instructions. Therefore, any manipulation, modification or transformation applied to Sensing Tex commercialized materials which do not match the standard existing protocols also given to the clients, or which are not strictly authorized by Sensing Tex, will cause an invalid existing product operation warranty, and Sensing Tex will not be responsible of any damage to the product or malfunction.

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