

# pacinian HapticTouch™ Surface Actuation System

### Typical Applications

- Medical equipment
- Keyboards
- Aerospace & Defense controls
- Industrial controls
- Gaming systems
- Point of sale terminals
- Self service kiosks
- Handheld devices
- Touch panels & pads
- Vehicle interiors

### Features and Benefits

- Thin - heights less than 1mm
- Reliable
- High fidelity
- Scalable
- Ease of integration
- Power efficient
- Configurable & customizable
- Alerts for invalid entries
- Variations in frequency or magnitude to represent different objects being controlled

## to FEEL is to Believe



Haptic feedback is intended to make up for the absence of tactile feedback from an entirely smooth touch surface. With haptic feedback, you can see, hear, and FEEL what you are touching. This feedback improves performance, reduces errors, decreases mental workload, and enhances the user experience.

As a licensed OEM integrator of the HapticTouch™ Surface Actuation System by Pacinian, Esterline Interface Technologies can give your input device distinct character.

Pacinian's HapticTouch technology provides realistic feedback, so everyone from texters to operators of medical test equipment can feel that they've hit the right key. HapticTouch uses two conductive materials that are charged and separated by a thin layer of air. When the touch surface is pressed, the charged layers pull together, causing the touch layer to actuate. This creates a feeling of a button depressing, even when there is no button. HapticTouch can also use vibration to provide feedback, and both methods can be adjusted to the user's specifications.

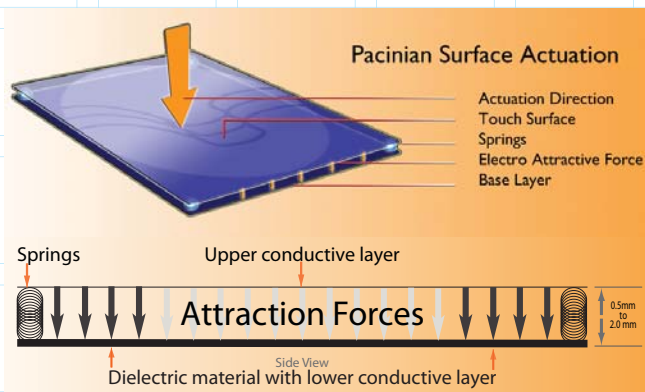
Not only is this the thinnest haptic design available on the market today, it is scalable to fit a wide range of applications, form factors, and surface types.



# SPECIFICATIONS

ELECTRICAL	
Energy used (typical per haptic pulse)	30m Joules
Voltage	5V DC $\pm$ .2V
ENVIRONMENTAL	
Operating temperature	-10° to +50° C
Storage temperature	-40° to +70° C
Humidity	5% to 95% RH non-condensing
Altitude	-1,000 ft. min., +15,000 ft. max.
Moisture/Dust	IP53 (minimal ingress of dust, water spray up to 60° from vertical Dust Test)
Sealing	20°C/hr. storage limits, 3 cycles
Temperature cycling	2 hours/axis random vibration between 10 and 500 hz @ 5.03 G-rms
Vibration	
ELECTROMAGNETIC COMPATIBILITY	
EMC	Emissions EN 55022, 2007 Group 1 Class B
ESD	$\pm$ 8kV Air, $\pm$ 6kV contact
VARIOUS	
Haptics effect minimum force/deflection	Feedback Force: 200 grams Deflection: 0.015"
Mechanical life	1 million TS activations and corresponding haptics tactile responses
Optical clarity of assembly	70% to 90% transmission at beginning of life
Warranty	1 Year

## Esterline and Pacinian provide Haptic (tactile) feedback integration to touch devices.



- Two conductive layers are charged, generating an attraction force
- Springs support the active touch surface, and returns it to a normal state between actuations
- A dielectric layer is added to maintain the voltage difference and increase the force
- A controller consisting of: power supply, switching electronics and micro controls force and travel enabling a broad range of haptic profiles



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