TouchSense® Force Feedback Electronics
for Gaming

Immersion's TouchSense® Force Feedback Electronics lets simulators and arcade games provide tactile and kinesthetic realism for an immersive user experience. A dedicated force processor supports simultaneous effects such as cornering forces with road vibrations. Immersion force feedback lets you think big and create wildly fun and interactive user experiences and environments for virtual Formula One racers to Space Shuttles.

Highlights

• Easy, low-cost implementation

• Force feedback control loop reduces communications overhead for faster response time

• Compatible with industry leading peripherals

• Time-saving GUI effects authoring tool and effects-based API

Prototype force feedback in wheels and joysticks

For simulators, arcade games, and arcade-quality stand-alone peripherals, the TouchSense Force Feedback Electronics board comes with Immersion drivers for Microsoft Windows and the Immersion Studio for Gaming authoring tool.

The electronics board supplies fast and efficient integration of powerful, realistic, simultaneous force feedback effects for joysticks or steering wheels. It is optimized for the Suzo Happ Controls steering wheel (part #50-0102-08) and other peripherals. With configurations supporting up to 4 inputs (such as steering, brake, clutch, and throttle) and up to 16 function buttons, the board also provides a convenient wiring hub for passing user interactions with other system components to the game or simulator engine.

"Force feedback just makes it so much more fun, it's hard to put into words!"

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Robust, realistic TouchSense technology

The dedicated force feedback processor, delivering a loop rate of up to 1 KHz, can be set to automatically play realistic effects, which lowers communications to your system processor and provides fast response. With power output up to 125W, forces can be extremely strong to boost excitement and intensify the virtual reality experience.

Fast development for better results

In addition to control electronics, you can use the Immersion Studio for Gaming authoring tool's prebuilt force feedback effects to save precious development time. Prebuilt effects saved as Immersion Force Resource (IFR) files can be used for actions not tied to the game engine, such as button response. These effects can be called from the game with a single line of code.

Effect designers can also save time by playing a suitable prebuilt effect and copying or editing its parameters to fit a specific scene. IFR files can be played independently, so you can test/edit/test without recompiling, which saves time. Faster iteration helps you achieve better results.

Immersion Studio for Gaming features include:

- Compound Effect View: Supplies a timeline and graphical display to aid in aligning sensations to sound and other force feedback effects.

- Sound Effect Loading: Adds sound effects by directory in order to synchronize force feedback sensations to sound files.

- Intuitive Graphical Metaphors: Adjusts force feedback parameters using easy-to-understand pictorial controls. Depending on the hardware device you are designing for, you can see and feel waveforms, grids, springs, and other effects and adjust parameters by dragging points, adjusting sliders and dials, or typing in numbers directly.

- Fully Customizable Effects and Numerous Preset Examples: Lets you create your own custom sensations or draw from the many predefined effects (for example, lasers, cannons, mud, slippery ice).
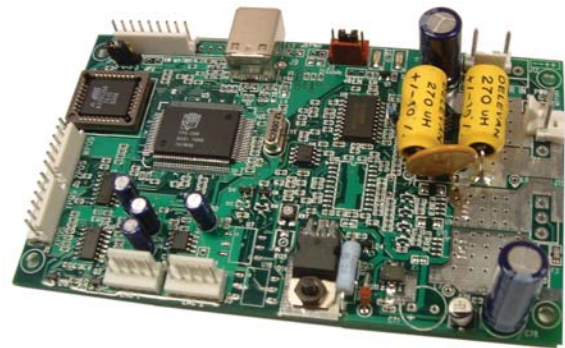

Immersion Studio for Gaming files can be played independently, so you can test and edit without recompiling, which saves time. You can save, copy, modify, or combine effects to create a library of your favorite force feedback sensations.

Specifications

- Force processor loop rate: up to 1 KHz

- Amplifier output: up to 125W per motor

- Potentiometer and encoder inputs: automatic calibration and ranging, optional self-centering spring

- Output channels: 2 PWM (joystick), 1 PWM (wheel)

- Function button support: up to 16 digital

- USB DirectX drivers: Windows XP or Vista (DirectX 7.0 or later required)

- Power supply requirements: 12–24V; amperage application dependent

- Commercial operating temperature: 0–50ºC

- Board status indication: LEDs

- Compliance: RoHS

- Warranty: 12 months

- Board size: 3 x 5 in

Including powerful force feedback in your system is as easy as dropping in the small 3 x 5 inch TouchSense Force Feedback Electronics board.

Configurations

- Support for 2-pedal device: analog potentiometer input for wheel position and 2 analog potentiometer inputs for brake and accelerator (part no. COEM-GCE-H2P5A-HF)

- Support for 3-pedal device: analog potentiometer input for wheel position and 3 analog potentiometer inputs for accelerator, brake, and clutch (part no. COEM-H3P5A-HF)

- Support for a 3-pedal device: digital encoder input for wheel position and 3 analog potentiometer inputs for accelerator, brake, and clutch (part no. COEM-GCE-IDW3P5A)

- Support for a joystick, with roll and pitch (X and Y axis feedback); yaw not supported (part no. COEM-GCE-ISTICK5A-HF)

About Immersion

Haptic technologies are transforming digital devices everywhere. Electronics manufacturers are providing digital controls with authentic tactile confirmation. Industrial and commercial manufacturers are increasing the accuracy, efficiency, and safety of the user experience. Content developers are creating a more engaging experience for mobile handset users. Game developers are captivating users with more intense and enjoyable entertainment. Medical schools and hospitals create a more realistic and engaging multisensory experience for surgical simulation training. Immersion technology puts the sensation of touch in the hands of visionary manufacturers worldwide.

Founded in 1993, Immersion Corporation is the recognized leader in digital touch technology and products. Immersion's technology is deployed across automotive, consumer electronics, entertainment, industrial, medical training, and mobile products. Immersion holds more than 900 issued or pending patents in the U.S. and other countries.

Learn more

To learn more about Immersion's TouchSense Force Feedback Systems, visit us on the web at http://www.immersion.com/products/touchsense-force-feedback/ or e-mail us touch@immersion.com.

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